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Filer:	Jerry Salamy
Organization:	Jacobs
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Petition for Post-certification License Amendment

Installation of the Advanced Gas Path/ Compressor Upgrade Project

for the

Magnolia Power Plant

City of Burbank, California
(01-AFC-06C)

Submitted to the:

California Energy Commission

Submitted by:

Southern California Public Power Authority

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With Technical Assistance by:

Jacobs

ENVIRONMENTAL MANAGEMENT PROFESSIONALS, LLC

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Executive Summary

The Southern California Public Power Authority (SCPPA) respectfully submits this petition to the California Energy Commission (CEC) for post-certification license modification for the Magnolia Power Project t (MPP) (01-AFC-06C). The SCPPA owns the MPP, a combined cycle electrical power generating facility (CCGF). The MPP is located in the City of Burbank and is operated by the City of Burbank, Department of Water & Power (BWP). The MPP electric power generating facility consists of a 1-on-1, combined cycle Power Island. The power island includes a natural gas fired, General Electric Model PG7241FA combustion turbine generator (CTG). The gas turbine (GT) exhausts into a fired (using a duct burner) heat recovery steam generator (HRSG). Steam from the HRSG is admitted into a steam turbine generator (STG). Natural gas is the only fuel utilized by the gas turbine and the duct burner. The combustion turbine has a rated generating capacity of 181 megawatts (MW). The STG has a rated capacity of 142 MW, for a facility total electrical generation rate of 323 MW.

The SCPPA is proposing to install and operate targeted upgrades at the existing MPP. The upgrades will increase operational capacity/output and provide energy efficiency improvements by deploying Advanced Gas Path (AGP) and Advancements to the Compressor (AC) packages to the existing system. These improvements will result in an overall increase in power production, will support improved resiliency and will provide state level resource adequacy. Power generated by the system will be made available for multiple uses during normal operating hours, including during peak and high peak periods.

This petition for post-certification license amendment (Petition to Amend) proposes to operate the MPP utilizing the enhanced capabilities of the installed Advanced Gas Path (AGP) components and compressor upgrade. The Petition to Amend (PTA) includes the following actions:

- Increase electrical production from the licensed MPP combustion turbine from 181 MW to 212 MW (gross), an increase of 31 MW.
- Increase combustion turbine fuel consumption from 1,787 million British thermal units per hour on a higher heating value (MMBtu/hr-HHV) basis to a heat input of 2,103 MMBtu/hour-HHV.
- The increased fuel consumption will increase the STG output from approximately 142 MW to 143 MW (gross).
- Increase air emissions commensurate with the increased fuel consumption.

SCPPA expects the South Coast Air Quality Management District (South Coast AQMD) to issue a Determination of Compliance (DOC) that will result in the modification of the Air Quality Conditions of Certifications (COC). As such, SCPPA is not proposing changes to the Air Quality COCs but will wait for the SCAQMD to issue the DOC with revised permit conditions.

The environmental analysis presented in Section 3 concludes that there will be no significant environmental impacts associated with the implementation of the actions specified in this PTA, and that the project, as modified, will comply with all applicable laws, ordinances, regulations, and standards.

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1. Introduction

1.1 Background

MPP is located at 1110 West Magnolia Boulevard in the City of Burbank, California, within an existing 23-acre power generating facility. The facility is located approximately 2,000 feet southwest of the Burbank City Hall, and it is bordered by Magnolia Blvd. on the north, Lake Street on the west, Flower Street on the east, and Olive Avenue on the south. The facility is bordered by industrial properties on all sides, and the nearest sensitive receptor (school) is located approximately 2,500 feet southwest of the facility.

The CEC approved the MPP project in March 2003 (CEC, 2003a).

Staff approved verification changes to Conditions of Certification VIS-1 and VIS-6 to avoid unnecessary and burdensome requirements that are not needed to confirm compliance with the conditions on September 2, 2003.

Staff approved adding two additional laydown areas for equipment storage and additional parking on October 31, 2003.

Staff approved modifying the on-site 69 kV transmission system and improve the bus configuration at the Olive Switchyard on May 4, 2004.

Staff approved additional safety platforms, stairs and ladders on September 14, 2007.

Staff approved adding rack & pinion elevator (2760 lb capacity) to provide vertical transport service from a base landing to a top landing on the platform that is 87 feet above the base on February 3, 2012.

Order No. 17-0809-03 approved modifications to startup and shutdown operation including an increase in startup duration, number of startups and shutdowns, and duct burner operation on August 15, 2017.

Staff approved modifying the combustor system to improve combustion turbine generator-turndown while maintaining the current emission limits and installation of new fuel gas system piping on February 12, 2020. This amendment modified the Air Quality Conditions of Certification.

Staff approved upgrading the existing combustion system to allow improved combustor turndown and increased operating flexibility to integrate better with intermittent renewable energy resources on March 24, 2021. The upgrade allowed the turbine to operate at lower loads without increasing the emission limits.

1.2 Overview of Proposed Amendments

This Petition to Amend addresses the impacts associated with the installation and operation of the AGP/AC packages to the existing system. These components will be internal to the gas turbine enclosure and will not be visible to the public.

The MPP combustion turbine and STG are rated with generating capacity of 181 MW and 142 MW, respectively, with a total electrical generation capacity of 323 MW. The installation of the AGP/AC is expected to increase the CT electrical production to 212 MW, an increase of up to 31 MW.

This increased electrical output will require an increase in fuel consumption of approximately 316 MMBtu/hr-HHV, resulting in a maximum heat input to the CT of 2,103 MMBtu/hr-HHV.

The increase in CT fuel consumption will result in a slightly higher CT exhaust flow rate, which in turn will result in an increase in the STG electrical output. The current STG output is approximately 142 MW and after the implementation of the proposed project, the STG output will increase to approximately143 MW (gross).

Detailed descriptions of the proposed modifications are included in Section 2.

This PTA contains the information that is required pursuant to the CEC's Siting Regulations (California Code of Regulations [CCR] Title 20, Section 1769, Post Certification Amendments and Changes). This information is contained in Sections 1 through 6, as summarized in Table 1.2-1.

Table 1.2-1. Informational Requirements for Post-certification Modifications

Section 1769 Requirement	Section of Petition Fulfilling Requirement
(A) A complete description of the proposed modifications, including new language for any conditions that will be affected	Section 2— Proposed modifications Section 3 — Proposed changes to COCs, if necessary, are located at the end of each technical section
(B) A discussion of the necessity for the proposed modifications	Section 1.3
(C) If the modification is based on information that was known by the petitioner during the certification proceeding, an explanation why the issue was not raised at that time	Section 1.3
(D) If the modification is based on new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision, an explanation of why the change should be permitted	Sections 1.4 and 3.0
(E) An analysis of the impacts the modification may have on the environment and proposed measures to mitigate any significant adverse impacts	Section 3
(F) A discussion of the impact of the modification on the facility's ability to comply with applicable laws, ordinances, regulations, and standards;	Section 3
(G) A discussion of how the modification affects the public	Section 4
(H) A list of property owners potentially affected by the modification	Section 5
(I) A discussion of the potential effect on nearby property owners, the public and the parties in the application proceedings.	Section 6

1.3 Necessity of Proposed Changes

The CEC Siting Regulations require a discussion of the necessity for the proposed revisions to MPP certification and whether the amendment is based on information known by the petitioner during the certification proceeding (Title 20, CCR, Sections 1769 (a)(1)(B), and (C)). This Petition to Amend proposes to increase electrical production and fuel consumption from the installation of upgraded original equipment manufacturer (OEM) compressor and combustor components that were not available at the time of licensing.

1.4 Consistency of Changes with Certification

The CEC Siting Regulations also require a discussion of the consistency of the proposed project revision with the applicable laws, ordinances, regulations, and standards (LORS) and whether the modifications are based on new information that changes or undermines the assumptions, rationale, findings, or other basis of the final decision (Title 20, CCR Section 1769 (a)(1)(D)). If the project is no longer consistent with the certification, the PTA must provide an explanation why the modification should be permitted.

The proposed project modifications described in this PTA are consistent with all applicable LORS, as discussed in Section 3, and this PTA is not based on new information that changes or undermines any basis for the final decision. The proposed project changes would allow the MPP to continue to run efficiently, and would meet environmental goals while satisfying the current increased demand for electricity. The MPP would continue to operate in compliance with all applicable LORS. Therefore, the findings and conclusions contained in the Commission Decision for MPP and subsequent amendments would remain applicable to the project, as modified.

1.5 Summary of Environmental Impacts

The CEC Siting Regulations require that an analysis be conducted to address the potential impacts the proposed modifications may have on the environment and propose measures to mitigate any potentially significant adverse impacts (Title 20, CCR, Section 1769 (a)(1)(E)). The regulations also require a discussion of the impact of the modification on the facility's ability to comply with applicable LORS (Section 1769 (1)(a)(F)). Section 3 of this Petition to Amend includes a discussion of the potential environmental impacts associated with the modifications as well as a discussion of the consistency of the modifications with applicable LORS. Section 3 also includes updated environmental baseline information if changes have occurred since the AFC was prepared that would have a bearing on the environmental analysis of this PTA.

Section 3 concludes that there will be no significant environmental impacts associated with implementing the actions specified in this PTA and that the project, as modified, will comply with all applicable LORS.

1.6 Conditions of Certification

This PTA proposes to change the Air Quality COCs based on the South Coast AQMD's issuance of a DOC with revised permit conditions. No changes to any other COCs are proposed.

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2. Description of Proposed Amendments

This section includes a description of the proposed project modifications, consistent with CEC Siting Regulations (Title 20, CCR, Section 1769 (a)(1)(A)).

SCPPA is proposing to install an upgraded AGP/AC system. The upgraded AGP/AC components are functionally identical to those scheduled for replacement, but with slight performance improvements that result in increased electrical output and efficiency, with a slightly higher fuel consumption.

2.1 Advanced Gas Path/Advanced Compressor

2.1.1 Advanced Gas Path/Advanced Compressor Upgrades

The 7F AGP program utilizes 7F.04 Hot Gas Path (HGP) technology incorporating cooling and sealing enhancements and advanced materials to allow efficient operation at increased firing temperatures. Together with the 2.6+ combustor (already installed) and model-based controls architecture, the AGP upgrade delivers improved output and heat rate while increasing hardware inspection intervals and replacement lives; all while maintaining air emissions concentrations.

The 7F AGP Tech offering builds on the mature and field-proven 7F AGP product by incorporating latest generation HGP technology, further optimizing cooling flows and materials. This allows for increased firing temperature capability and performance while maintaining hardware inspection intervals when combined with the 7F DLN 2.6+ combustion system (already installed).

The Advanced Hot Gas Path includes a complete set of 7FA.04 design HGP components, to include first, second and third stage nozzles, buckets, and shrouds. A new support ring for the first stage nozzle will also be installed.

According to General Electric, technological enhancements included in the AGP revolve around application of advanced materials used in FB, H-class, and Aviation engines as well as optimization of secondary cooling and sealing flows. Additionally, 3D aerodynamic design methodology has been applied to the first stage nozzle and bucket to further enhance efficiency.

The implementation of the Advanced Gas Path will provide the following benefits:

- Significant increase in base load output capacity of the gas turbine.
- The very slight increase in available exhaust energy to bottoming cycle results in a less than 1 megawatt increase in steam turbine output.

2.1.1.1 Advanced Compressor

The upgrade to the advanced compressor consists of retrofitting a 7FA.05 compressor, GE's most advanced high efficiency compressor technology along with a Gen-V turbine rotor, into the 7FA.03 gas turbine's combined AGP Tech Package to provide significant improvements in output and heat rate, as well as enhancements in reliability and maintainability.

The 7FA.05 compressor consists of 14 stages specifically modeled for a higher flow rate, enabling greater output. The compressor flow path has been planned to accommodate inlet conditioning with improved leading edge erosion tolerance.

The rotatory and stationary airfoils incorporate a three-dimensional aerodynamic shape for reduced degradation and improved fuel efficiency. The first three stages of the compressor contain variable stator vanes that provide the gas turbine with a wider operating envelope and enhance hot-day and part-load efficiency.

The rotor is bolted steel construction with two sets of durable concentric tie bolts specifically planned to improve the aerodynamic flow path. The rotor blades and wheels incorporate a circumferential dovetail design that permits removing the blades without pulling the rotor from the casing, thereby improving maintainability.

The compressor casings have been built to match the rotor and the existing DLN2.6+ combustor interface. The inlet casing and mid compressor casing incorporate provisions for an advanced Blade Health Monitoring (BHM) system for stages 1 through 3 rotor blades. Furthermore, additional borescope holes have been included in the compressor casings to simplify and fortify inspections.

Implementation of the 7FA.05 compressor upgrade will provide the following benefits:

- Increased base load output & efficiency
- Improved part load efficiency
- Field replaceable compressor rotor blades
- Improved hot day performance
-

In summary, the power output from the upgraded MPP combustion/gas Turbine will increase to 211.72 MW (Gross). In addition, the maximum fuel rating for the GT will increase to 2,103 MM Btu/hr-HHV,

It is important to note that after the upgrades to MPP are completed, MPP will continue to operate with the currently permitted NOx emission limit of 2 ppmv, dry basis. at 15% O2. In addition, the MPP CCGF will continue to comply with the currently permitted CO and VOC emission limits of 2 ppmv, 1-hour average, dry basis, at 15% O2.

2.2 Electrical Output Increase Associated with the AGP/DLN

The MPP combustion turbine and STG are rated at the generating capacity of 181 and 142 MW, respectively, with a total electrical generation rate of 323 MW. The installation of the AGP/AC is expected to increase the CT electrical production to 212 MW, an increase of up to 31 MW.

This increased electrical output will require an increase in fuel consumption of approximately 316 MMBtu/hr-HHV, resulting in a maximum heat input per CT of 2,103 MMBtu/hr-HHV.

The increase in CT fuel consumption will result in a slightly higher CT exhaust flow rate, which in turn will result in an increase in the STG electrical output. The current STG output is approximately 142 MW and after the implementation of the proposed project, the STG output will increase to approximately143 MW.

2.3 Installation Process

The installation of the AGP/AC will require the disassembly of the existing combustion turbine enclosure and combustion turbine components (combustors and compressor sections). The combustion turbine will be shut down and locked out, and safety briefings will be held. The distinct components and assemblies of casings, piping, valves, actuators, nozzles, and specialty turbine components will be disassembled and removed. The disassembled items that will be reused will be cleaned and inspected. The new components that are a part of the upgrade and replacing the old components will be installed, and the full turbine assembly will be restored. An additional turbine pier anchor steel bracket will be installed to accommodate the base frame of the advance compressor. The steel bracket will be affixed to the turbine base via welding. Additional combustion turbine/steam turbine control system software installation will be included in the upgrade project.

The installation is expected to take up to 95 working days (including equipment cool down period) to complete in day/evening shifts. SCPPA expects to require up to 50 workers onsite daily (spread over the two shifts) during the installation peak. The installation process may require a mobile crane, mobile office trailers, a warehouse style forklift, a rough terrain heavy duty forklift, a telescoping boom man-lift, a welding machine, light plants, and gas turbine specialty tooling to complete the installation. The construction equipment is equipped with exhaust mufflers, so construction is not expected to result in significant noise impacts. No ground disturbance is expected and equipment laydown/parking will occur on paved areas within the project site.

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3. Environmental Analysis of Proposed Amendments

The proposed modifications to the MPP would be limited to the installation of the AGP/AC components and the air quality/public health operational impacts associated with the slightly increased air emissions. No ground disturbance or excavation is expected and no other physical changes to MPP are planned. As a result, the environmental analysis for most of the environmental disciplines does not differ significantly from that described in the AFC and the impacts associated with this PTA would be less than significant. However, for completeness, a review of the impacts and LORS compliance is provided for applicable topic areas.

The following subsections present a discussion of the potential impacts that the proposed changes may have on the environmental analysis as presented in applicable sections of the AFC. Each discussion includes an environmental analysis, an assessment of compliance with applicable LORS, proposed mitigation measures, and, if applicable, proposed changes to the COCs that are necessary as a result of project modifications.

3.1 Air Quality and Greenhouse Gases

3.1.1 Environmental Baseline Information

The installation of the AGP/AC will result in air quality and greenhouse gas (GHG) emissions due to the tailpipe emissions associated with the construction equipment, delivery trucks, and the construction worker's commute.

The operation of the AGP/AC will result in a slight increase in air emissions due to the increase in the hourly heat input. As such, the project owner will be required to submit an permit to construct application to the South Coast AQMD demonstrating that the project will not cause or contribute to a violation of an ambient air quality standard and that it complies with applicable laws, ordinances, regulations, and standards (LORS).

3.1.2 Environmental Consequences

3.1.2.1 Construction Impacts

The SCPPA is proposing to replace both gas path and compressor components within an existing combustion turbine at the MPP, which is located in the City of Burbank and is operated by BWP. The project will start in the first quarter of 2027 and is expected to be complete by the second quarter of 2027. This proposed project will require the disassembly of the existing combustion turbine enclosure and combustion turbine components (combustors and compressor sections). The distinct components and assemblies of casings, piping, valves, actuators, nozzles, and specialty turbine components will be disassembled and removed. The disassembled items that will be reused will be cleaned and inspected. The new components that are a part of the upgrade and replacing the old components will be installed, and the full turbine assembly will be restored. An additional turbine pier anchor steel bracket will be installed to accommodate the base frame of the advance compressor. The steel bracket will be affixed to the turbine base via welding. Additional combustion turbine/steam turbine control system software installation will be included in the upgrade project.

This technical memorandum presents an assessment of potential air quality impacts associated with the proposed action, based largely on an estimate of air emissions associated with the proposed construction activity.

Methodology

Onsite project construction emissions are expected from vehicle and construction equipment exhaust. The following criteria pollutant emissions were estimated: reactive organic gases (ROG), carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO_2), particulate matter having an aerodynamic equivalent diameter of 10 microns or less (PM_{10}), and particulate matter having an aerodynamic equivalent diameter of 2.5 microns or less ($PM_{2.5}$). Greenhouse gas (GHG) emissions were also estimated in the form of carbon dioxide equivalent (CO_2e).

Construction equipment exhaust and vehicle exhaust emissions were estimated using the California Emissions Estimator Model (CalEEMod; version 2022.1.1.21). CalEEMod is a statewide computer model developed by ICF, in collaboration with the Sacramento Metropolitan Air Quality Management District, that "provides a simple and integrated platform to quantify construction and operations emissions, assess climate hazards and vulnerabilities, identify environmental burdens, and evaluate benefits of various emission reduction, climate risk reduction, and health and equity measures" (ICF 2022). CalEEMod incorporates the California Air Resources Board's (CARB) emission factor models for off-road construction equipment (OFFROAD2017; version 1.0.1) and on-road vehicles (EMFAC2021, version 1.0.1) as well as portions of the U.S. Environmental Protection Agency's (EPA) *AP-42, Fifth Edition, Compilation of Air Pollutant Emission Factors.*

Data and Assumptions

To the extent possible, site-specific data were used as input to CalEEMod. Site-specific data were obtained from the Petition to Amend (PTA), as provided by SCPPA. Where site-specific data were not available, conservative assumptions were made based on the project description. Defaults provided within CalEEMod for the project location were assumed representative unless otherwise noted. The following subsections describe the data entered into CalEEMod. Note that data related to operation, vegetation, climate risk, health and equity, demolition, electricity consumption, and architectural coatings were not entered or updated, if defaults were available, because these activities are neither expected as part of this project nor relevant to the current assessment. Therefore, any emissions estimates associated with these activities were disregarded in the model output.

Project Characteristics

The project location was selected based on the MPP site address, which is located in Los Angeles-South Coast County, California. The county selection dictated the wind speed, precipitation frequency, and land use used within CalEEMod.

Land Use

It was assumed that an Industrial land use category would best represent the site. The project area assigned to this land use category was set equal to the area associated with the plant (130,680 square feet or 3.0 acres). Construction activities (no ground disturbance) are expected to occur within this footprint.

Construction Schedule and Equipment

Schedule. The project is expected to have a 95-day duration. The project duration was assigned to begin in the first quarter of 2027 , assuming construction activities would occur 7 days per week. Within CalEEMod, the project was split into two (2) phases based on the change in number of haul truck trips within the first week of the construction project and the remaining duration.

Off-road Equipment. The anticipated heavy equipment used during the proposed project includes cranes, forklifts, air compressors and other general industrial equipment. The following modifications and assumptions were made to the anticipated equipment to accommodate entry into CalEEMod:

- The welding machine and rough terrain heavy duty forklift were assumed to be best represented by the other general industrial equipment type category.
- The light plant was assumed to be best represented by the air compressor equipment type category.
- The telescoping boom lift was assumed to be best represented by the crane equipment type category.
- The horsepower ratings and load factors were supplied by the client for the equipment selected.

- It was assumed that all equipment would operate an average of 24 hours per day over the 95-day construction period.

Trips and Vehicle Miles Traveled. 100 one-way trips per day for worker commutes were included in CalEEMod based on the assumption that there would be up to 50 workers onsite each day during the 95-day project duration. For the first seven days of the project, a total of 30 haul trucks are expected to arrive on site. This results in approximately 9 one-way haul truck trips per day. For the remaining 88 days of project duration, 10 trucks are expected to arrive per week. This results in approximately 3 one-way haul truck trips per day. The project is not expected to include any vendor deliveries or onsite truck trips. CalEEMod default one-way trip lengths of 18.5 miles for worker commutes and 20 miles for haul truck trips were assumed representative for this project in the absence of project-specific information.

Results

Potential impacts to air quality were evaluated based on the criteria pollutant and GHG emissions resulting from the proposed action. A project that generates emissions exceeding the applicable air district's thresholds of significance would be considered to have a significant impact on air quality and would require mitigation.

Table 1 presents the thresholds that were used for evaluating the project's significance as well as the project's construction emission estimates. The detailed CalEEMod report is provided in Attachment 1. Mass-based thresholds from the South Coast Air Quality Management District (SCAQMD 2023) were used.

Table 3.1-1. Comparison of the Project's Construction Emissions to the South Coast AQMD Thresholds of Significance

Pollutant	Thresholds of Significance	Project Construction Emissions [a]
ROG	75 pounds per day	4.72 pounds per day
CO	550 pounds per day	39.0 pounds per day
NOx	100 pounds per day	31.0 pounds per day
SO2	150 pounds per day	0.06 pounds per day
PM10 b	150 pounds per day	3.10 pounds per day
PM2.5 b	55 pounds per day	1.85 pounds per day
CO2e	10,000 metric tons per year	313 metric tons per year

Notes:

[a] The Project Construction Emissions represent the maximum daily or total annual results from CalEEMod, depending on the pollutant and associated significance threshold.

[b] The Project's PM_{10} and $PM_{2.5}$ emissions are based on the sum of exhaust and fugitive particulate emissions.

As demonstrated in Table 3.1-1, ROG, CO, NOx, SO_2, PM_{10}, $PM_{2.5}$, and CO_2e emissions generated by the proposed action are expected to be less than the applicable thresholds of significance. As a result, the proposed construction action at the site is not expected to have a significant impact on air quality and will not require mitigation with the implementation of the existing Air Quality Conditions of Certification AQ-C2 to AQ-C4.

References

ICF. 2022. *CalEEMod User's Guide*. April.

South Coast Air Quality Management District (SCAQMD). 2023. *South Coast AQMD Air Quality Significance Thresholds.* March. south-coast-aqmd-air-quality-significance-thresholds.pdf.

3.1.2.2 Operational Emissions

Attachment 2 presents the MPP's air quality permit to construct application submitted to the South Coast Air Quality Management District. This permit application demonstrates that the proposed operation of the AGP/AC on the MPP combustion turbine will not cause or contribute to a violation of an ambient air quality standard.

Regulatory Requirements

The installation of the AGP/AC will be performed in compliance with Conditions of Certification AQ-C2 through AQ-C4, thereby ensuring compliance with applicable laws, ordinances, regulations, and standard (LORS).

Attachment 2 demonstrate the operation of the MMP will continue to comply with applicable LORS.

Mitigation Measures

Attachment 2 shows that the operation of the MPP with the AGP/AC upgrades will require the surrender of both emission reduction credits (for volatile organic compounds or VOC emissions) and RECLAIM Trading Credits (for NOx emissions) to mitigate project increases in air emissions.

Consistency with LORS

The installation of the AGP/AC and subsequent operation of the MPP are expected to comply with applicable LORS.

Conditions of Certification

Section 5.1 of Attachment 2 presents the proposed changes to the Conditions of Certification.

3.2 Biological Resources

3.2.1 Environmental Baseline Information

The MPP site is devoid of potential natural biological resources habitat. However, the larger BWP area does contain landscaping plantings (landscaping trees, shrubs, lawn, and a vegetated arbor). No agricultural lands, wetlands or vernal pool habitat exist on site. In addition, no known threatened, endangered, or special status species (plant or animal) exists on site.

3.2.2 Environmental Consequences

Impacts on biological resources are considered significant if one or more of the following conditions could result from implementation of the proposed project:

- Substantial effect, reduction in numbers, restricted range, or loss of habitat for a population of a state- or federally-listed threatened or endangered species
- Substantial effect, reduction in numbers, restricted range, or loss of habitat for a population of special-status species, including fully protected, candidate proposed for listing, species of special concern, and certain California Native Plant Society (CNPS) California Rare Plant Rank (CRPR) designation
- Substantial interference with the movement of any resident or migratory fish or wildlife species
- Substantially diminish or reduce habitat for native fish, wildlife, or plants
- Substantial disturbance of wetlands, marshes, riparian woodlands, and other wildlife habitat
- Remove trees designated as heritage or significant under County or local ordinances

3.2.2.1.1 Potential Impacts

3.2.2.1.1.1 Potential Construction Impacts

The installation of the AGP/AC components is not expected to result in any ground disturbance. Prior to commencing work, the combustion turbine enclosure will be inspected for the presence of nests. If nests are present, SCPPA will consult with the qualified biologist to survey the nests and propose necessary exclusion zones to avoid impacting nesting birds.

3.2.2.1.1.2 Potential Operational Impacts

Operation of the MPP after the installation of the AGP/AC components will be like operation of the existing power plant. Minor increases in air emissions (specifically oxides of nitrogen) will be mitigated via the South Coast AQMD's Reclaim Trading Credits (RTC). Therefore, potential nitrogen deposition will be reduced with the expected increase in oxides of nitrogen emissions.

3.2.3 Mitigation Measures

None required.

3.2.4 Conditions of Certification

None.

3.3 Cultural Resources

The project is not expected to impact native soils or historic resources as all equipment laydown and parking will use existing paved areas. No excavation will be needed to install the equipment. Therefore, the proposed action is not expected to affect cultural resources, and no permits are required.

All construction workers will be given Worker Environmental Awareness Training (per CUL-5) so they will be familiar with cultural resources and know what to do in the event a potential resource is discovered during construction. Prior to construction, the name and resume of a Cultural Resources Specialist (CRS) will be provided to the CEC for approval.

3.3.1 Mitigation Measures

To minimize construction impacts to a less-than-significant level, the relevant COCs, particularly CUL-1, CUL-3, CUL-5, CUL-7, (and CUL-2, if needed) will be implemented for all construction activities. Therefore, this action will not create a significant cultural resources impact.

3.3.2 Consistency with LORS

The 2003 Commission Decision approving MPP found the project in compliance with all applicable LORS (CEC, 2003). This proposed action at MPP is expected to comply with applicable LORS.

3.3.3 Conditions of Certification

The installation of the AGP/AC components will not require changes to the COCs or require additional COCs for cultural resources because no new impacts, that have not already been considered, would be created.

3.4 Geologic Hazards and Resources

3.4.1 Environmental Baseline Information

This Petition to Amend does not require changes to the geologic hazards and resources environmental baseline information as described in the AFC.

3.4.2 Environmental Consequences

The proposed MPP modifications will not result in ground disturbance, excavations, earth moving, or foundation installation. No additional geologic resources or geologic hazards have been identified in the project area. Therefore, no impacts to geologic hazards and resources are expected.

3.4.3 Mitigation Measures

The proposed MPP modifications will not create a significant impact to geologic resources, and new geologic hazards have not been identified that require additional mitigation measures.

3.4.4 Consistency with LORS

The project conforms to applicable laws related to geologic hazards and resources.

3.4.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for geologic hazards and resources.

3.5 Hazardous Materials Handling

3.5.1 Environmental Baseline Information

This Petition to Amend does not require changes to the hazardous materials handling environmental baseline information as described in the AFC.

3.5.2 Environmental Consequences

The proposed MPP modifications will not result in the use of a new hazardous material onsite or increase the amount or delivery frequency of hazardous materials used. As only a minor increase in air emissions is expected, the number and frequency of ammonia deliveries is not expected to increase. Therefore, no impacts from hazardous materials handling are expected.

3.5.3 Mitigation Measures

The proposed MPP modifications will not create a significant impact from hazardous materials handling that will require additional mitigation measures.

3.5.4 Consistency with LORS

The project conforms to applicable laws related to hazardous materials handling.

3.5.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for hazardous materials handling.

3.6 Land Use

3.6.1 Environmental Baseline Information

This Petition to Amend does not require changes to the land use baseline information as described in the AFC.

3.6.2 Environmental Consequences

The existing MPP complies with Conditions of Certification LAND-1 to LAND-4. The installation of the AGP/AC components will not alter the location of the combustion turbine. Therefore, the findings made in the Commission Decision will still apply and no land use impacts are expected.

3.6.3 Mitigation Measures

The proposed MPP modifications will not create a significant land use impact that will require additional mitigation measures.

3.6.4 Consistency with LORS

The project conforms to applicable laws related to local land use policies.

3.6.5 Conditions of Certification

The proposed modifications do not require changes to the land use COCs.

3.7 Noise and Vibration

3.7.1 Environmental Baseline Information

This Petition to Amend does not require changes to the noise and vibration environmental baseline information as described in the AFC.

3.7.2 Environmental Consequences

The proposed MPP modifications will not increase noise-producing activities at the site. Furthermore, the increased electrical production and slight increase in fuel use will not result in significant noise or vibration impacts.

3.7.3 Mitigation Measures

The proposed MPP modifications will not create a significant impact to noise and vibration that requires additional mitigation measures.

3.7.4 Consistency with LORS

The project conforms to applicable laws related to noise and vibration.

3.7.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for noise and vibration.

3.8 Paleontological Resources

3.8.1 Environmental Baseline Information

This Petition to Amend does not require changes to the paleontological resources environmental baseline information as described in the AFC.

3.8.2 Environmental Consequences

No excavations or earth moving activities are associated with the installation and operation of the AGP/AC components. Therefore, no impacts to paleontological resources are expected.

3.8.3 Mitigation Measures

The proposed MPP modifications will not create a significant paleontological resource impact and will not require additional mitigation measures.

3.8.4 Consistency with LORS

The proposed increase in electrical production at MPP will not trigger applicable paleontological LORS. Therefore, the project conforms to applicable laws related to paleontological resources.

3.8.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for paleontological resources.

3.9 Public Health

3.9.1 Environmental Baseline Information

This Petition to Amend does not require changes to the public health environmental baseline information as described in the AFC.

3.9.2 Environmental Consequences

Section 4.1.13 of Attachment 2 demonstrates that the operation of the MPP after the installation of the AGP/AC components will not result in significant public health impacts. The human health risk assessment results show that maximum cancer risk, acute hazard index, and chronic hazard index will be 0.32 in a million, 0.005, and 0.003, respectively at the MEIR. These values are within the Rule 1401 thresholds for maximum cancer risk, (1 in a million), acute hazard index (1.0) and the chronic hazard index (1.0).

3.9.3 Mitigation Measures

The proposed MPP modifications will not create a significant public health impact and will not require additional mitigation measures.

3.9.4 Consistency with LORS

The proposed increase in electrical production at MPP will not trigger applicable public health LORS. Therefore, the project conforms to applicable laws related to public health.

3.9.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for public health.

3.10 Socioeconomics

3.10.1 Environmental Baseline Information

This Petition to Amend does not require changes to the socioeconomic environmental baseline information as described in the AFC.

3.10.2 Environmental Consequences

The installation and operation of the AGP/AC components is expected to have little or no impact on the assessed parcel value or local economy.

3.10.3 Mitigation Measures

The proposed MPP modifications will not create a negative impact to socioeconomics that requires additional mitigation measures.

3.10.4 Consistency with LORS

The project conforms to applicable laws related to socioeconomics.

3.10.5 Conditions of Certification

The Commission Decision did not include COCs for socioeconomics.

3.11 Soils and Agriculture

3.11.1 Environmental Baseline Information

This PTA does not change the soils and agricultural environmental baseline information described in the AFC.

3.11.2 Environmental Consequences

The proposed MPP modifications do not result in any ground disturbance or excavations and occur entirely within the developed project site. Therefore, no impacts to soils or agriculture are expected.

3.11.3 Mitigation Measures

The proposed MPP modifications will not create a significant impact to soils or agriculture that requires additional mitigation measures.

3.11.4 Consistency with LORS

The project conforms to applicable laws related to soils and agriculture.

3.11.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for soils.

3.12 Traffic and Transportation

3.12.1 Environmental Baseline Information

The following are key project assumptions used for the assessment:

- 50 workers on-site daily; 2 worker shifts (9 AM to 9 PM; 9 PM to 9 AM); 25 workers for each shift (50:50 split)
- 30 truck deliveries the first week of construction and 10 truck deliveries per week through the end of construction
- Trucks will enter and exit the project site outside the AM and PM peak periods; per Burbank transportation guidelines the AM peak period is 7 to 10 AM and PM peak period is 4:30 pm to 7:30 PM.

These assumptions are used in the following construction traffic assessment.

3.12.2 Environmental Consequences

A. Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

The construction activities associated with the installation of the Advanced Gas Path/Advanced Compressor (AGP/AC) packages would not require closures on the roadways, transit, bicycle, or sidewalks. All construction activities are anticipated to occur on-site and outside of the public right-of-way. Access will be via existing site driveways along Magnolia Boulevard and North Lake Street. Construction worker parking and equipment laydown/parking will occur on paved areas within the project site.

Construction is a temporary condition and generally programs, plans, ordinances, and policies are focused on permanent conditions rather than construction activities. Therefore, the construction of the project is not anticipated to conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian. No impact would occur during the construction of the project.

B. Would the project conflict or be inconsistent with CEQA Guidelines 15064.3(b) related to the increased Vehicle Miles Traveled?

The construction activities associated with the installation of the AGP/AC packages may result in temporary increases in vehicle miles traveled (VMT) for site trips. The installation of the AGP/AC is expected to be up to 95 working days with up to 50 workers on-site daily during the installation peak. The workers would be spread between two 12-hour shifts. One shift begins at 9 AM (day shift) and the other shift begins at 9 PM (night shift). It is assumed that there will be 25 workers for the day shift and 25 workers for the night shift. The worker trips are expected to originate from their residences. Therefore, the estimated construction-related traffic is 100 round trips per day, resulting in a temporary increase in VMT at the site.

The *Technical Advisory on Evaluation Transportation Impacts in CEQA (OPR 2018)* cites a significance screening threshold for small land use projects of 110 vehicle trips per day. This threshold is for permanent trips, so it doesn't necessarily apply to construction activities, but there are no thresholds cited for temporary traffic. The peak of 100 vehicles per day for the AGP/AC packages installation is lower than the OPR screening threshold, resulting in an exemption for conducting a detailed VMT analysis, and would generally be assumed to cause a less-than significant transportation impact.

The installation process would require up to 30 trucks during the first week of installation and 10 trucks per week through the end of the installation. As noted in the *Technical Advisory on Evaluation Transportation Impacts in CEQA (OPR 2018)*, the VMT analysis is intended to focus on automobile and light-duty truck trips. As a result, the estimated construction-related traffic only considers the construction worker trips.

Because the increase in vehicle trips and associated VMT would be temporary and falls below the screening threshold for permanent trips, the proposed project is not anticipated to substantively change the surrounding vehicle transportation system. When construction is completed, construction-related traffic would cease and VMT levels would return to pre-construction conditions. The proposed project is not anticipated to conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). Therefore, the project impact will be less than significant.

C. Would the project substantially increase hazards due to geometric design features or incompatible uses?

The construction activities associated with the installation of the AGP/AC packages would not substantially increase hazards due to geometric design features nor will they introduce incompatible uses to the project area. Project construction will not alter the geometry of any public roadways or intersections. All construction activities are anticipated to occur on-site and outside of the public right-of-way. Access will be on existing site driveways along Magnolia Boulevard and North Lake Street.

The additional traffic associated with the construction activities would be added on the local roadways temporarily interacting with other vehicles, similar to background traffic. Potential conflicts could also temporarily occur between the additional traffic and bicyclists and pedestrians, similar to background traffic. However, these temporary conflicts would be negligible as all vehicles would follow the rules of the road and yield to bicyclists and pedestrians.

The temporary increase in traffic associated with the construction activities on the freeway off-ramps is expected to be lower than 25 peak hour trips. The added traffic associated with the project on the freeway off-ramps would be construction-related traffic entering the site. Based on the number of workers per day and shift schedule, there will be 25 workers entering the site during the AM peak period (7 to 10 AM) and no workers entering the site during the PM peak period (4:30 to 7:30 PM). All truck traffic is assumed to enter the site outside the AM and PM peak periods. There are several freeway off-ramps that could potentially be used to access the project. On northbound Interstate 5 (I-5), the Alameda Avenue, Olive Avenue and Burbank Boulevard off-ramps are surrounding off-ramps that could be used by the workers. On southbound I-5, surrounding off-ramps are the Burbank Boulevard, Verdugo Avenue and Alameda Avenue off-ramps. With the several off-ramps for the workers to choose from depending on their origin, the 25 workers (25 vehicle trips) accessing the project site during the AM peak period would most likely spread between all these ramps resulting in less than 25 vehicle trips during the peak period at each of the ramp.

Because the project is not altering the project access, not introducing new geometric features within the public right-of-way, additional traffic on the local roadways and freeway off-ramps resulting in potentially new conflicts are negligible and temporary, and additional traffic on the freeway off-ramps are expected to be less than 25 peak hour trips, a CEQA Safety Analysis is not required per the City of Burbank Transportation Study Guidelines. Therefore, it is assumed that the project construction would not result in a substantial increase in hazards due to geometric design features or incompatible uses. The project impact will be less than significant.

D. Would the project result in inadequate emergency access?

The construction activities associated with the installation of the AGP/AC packages would not have a substantive effect on emergency access. During project construction, emergency vehicles would have the right of way over construction-related vehicles. Construction activities would not prevent or impede emergency access because all construction activities are anticipated to occur on the project site. Additional traffic associated with the construction activities may potentially interact with emergency response vehicles, similar to background traffic. However, any increase in delay would be negligible as all vehicles would yield to emergency response vehicles. With the completion of the project construction, traffic levels would return to pre-construction conditions. The project will not result in inadequate emergency access. Therefore, the project impact will be less than significant.

E. Would the project result in a roadway operational deficiency that would be contrary to the Burbank 2035 General Plan?

The construction activities associated with the installation of the AGP/AC packages would not result in a roadway operational deficiency that would be contrary to the Burbank 2035 General Plan. The installation of the AGP/AC is expected to require up to 50 workers on-site daily during the installation peak. The workers would be spread between two 12-hour shifts. One shift begins at 9 AM (day shift) and the other shift begins at 9 PM (night shift). It is assumed that there will be 25 workers for the day shift and 25 workers for the night shift.

The City of Burbank Transportation Study Guidelines indicates that the AM peak period is 7 to 10 AM and the PM peak period is 4:30 to 7:30 PM., 25 workers would enter the project site and 25 workers exit the project site during the AM peak period. During the PM peak periods, none of the workers would enter and exit the project site. With a conservative assumption that all workers drive alone to and from work, the total estimated construction-related traffic during the AM peak period is 50 vehicle trips and zero vehicle trips during the PM peak period. The installation process also would require 30 trucks during the first week of installation and 10 trucks per week through the end of the installation with trucks occurring outside the AM and PM peak periods. Therefore, the total construction-related trips are 50 vehicle trips during the AM peak hour and zero vehicle trips during the PM peak hour.

Per the City of Burbank Transportation Study Guidelines, projects generating 50 vehicle trips or less does not require an operational analysis to ascertain if the project will introduce a roadway operational deficiency that is incompatible with the Burbank 2035 General Plan. Because the project does not generate more than 50 peak period trips, an operational analysis is not required. Therefore, it is assumed that the temporary increase in traffic would not result in a roadway operations deficiency contrary to the Burbank 2035 General Plan. In addition, the increase in construction-related traffic is temporary. When project construction is complete, traffic levels would return to pre-construction conditions. Therefore, the project impact will be less than significant.

3.12.3 Mitigation Measures

The proposed MPP modifications will not create a significant impact to traffic and transportation that requires additional mitigation measures. However, SCPPA will implement the previously approved TRANS-4 traffic control plan and implementation program.

3.12.4 Consistency with LORS

The project conforms to applicable laws related to soils and agriculture.

3.12.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for traffic and transportation.

3.13 Visual Resources

3.13.1 Environmental Baseline Information

This Petition to Amend does not require changes to the visual resources environmental baseline information as described in the AFC.

3.13.2 Environmental Consequences

The installation and operation of the AGP/AC will not result in the physical alteration of MPP's appearance. The replaced combustion turbine is internal to these pieces of equipment and cannot be seen.

During the AGP/AC installation, SCPPA will perform night-time work requiring temporary construction lighting systems to be employed to ensure worker safety. These lighting systems will comply with Condition of Certification VIS-2 to ensure offsite nighttime lighting impacts will not result in significant visual impacts. Therefore, no impacts to visual resources are expected.

3.13.3 Mitigation Measures

The proposed MPP modifications will not create a significant impact to visual resources that requires additional mitigation measures.

3.13.4 Consistency with LORS

The project conforms to applicable laws related to visual resources.

3.13.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for visual resources.

3.14 Waste Management

3.14.1 Environmental Baseline Information

This PTA does not require changes to the waste management environmental baseline information as described in the AFC.

3.14.2 Environmental Consequences

The proposed MPP modifications will not result in a permanent increase in waste generation at the site. The replaced components will be recycled to the extent feasible. Therefore, no long-term impacts to waste management are expected.

3.14.3 Mitigation Measures

The proposed MPP modifications will not create a significant waste management impact and will not require additional mitigation measures.

3.14.4 Consistency with LORS

The project conforms to applicable laws related to waste management.

3.14.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for waste management.

3.15 Water Resources

3.15.1 Environmental Baseline Information

This Petition to Amend does not require changes to the water resources environmental baseline information as described in the Commission Decision and Amendments.

3.15.2 Environmental Consequences

The proposed MPP modifications will not result in an increase in water use or alter storm water drainage onsite. The installation and operation of the AGP/AC may result in a slight increase in steam turbine electrical production, which increases the heat rejection requirements. However, this increase is well within the operating parameters of the MPP cooling system and will not require additional water supplies or consumption.

As there are no soils impact and all equipment laydown and parking will be on paved surfaces, no impacts to surface waters are expected from rain events. However, appropriate best management practices (BMP) will be implemented consistent with MPP's operational stormwater pollution prevention plan.

Therefore, this Petition to Amend will not result in water resources impacts different than those analyzed by the CEC during the licensing of the project.

3.15.3 Mitigation Measures

The MPP's impacts on water resources with the proposed modifications are less than significant, and therefore, will not require additional mitigation measures.

3.15.4 Consistency with LORS

The project conforms to applicable laws related to water resources.

3.15.5 Conditions of Certification

The proposed modifications do not require changes to the COCs for water resources.

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4. Potential Effects on the Public

This section discusses the potential effects on the public that may result from the modifications proposed in this Petition to Amend, in accordance with CEC Siting Regulations (Title 20, CCR, Section 1769(a)(1)(G)).

With the implementation of the modifications proposed, the project would have no adverse effect on the public. As previously mentioned, the installation and operation of AGP/AC at MPP will increase electrical production with only slightly higher fuel consumption from the installation of upgraded original equipment. Therefore, no adverse effects on the public will occur because of the changes to the project as proposed in this Petition to Amend.

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5. List of Property Owners

A list of the property owners in accordance with the CEC Siting Regulations (Title 20, CCR, Section 1769(a)(1)(H)) whose property is located within 1,000 feet of MPP is provided under separate cover.

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6. Potential Effects on Property Owners, the Public, and Parties in the Proceeding

This section addresses the potential effects of the project changes proposed in this Petition to Amend on nearby property owners, the public, and parties in the application proceeding, in accordance with CEC Siting Regulations (Title 20, CCR, Section 1769 (a)(1)(I)).

The project as modified will not differ significantly in potential effects on adjacent landowners, compared with the project as previously certified. Operation of the MPP utilizing the enhanced capabilities as proposed will have no adverse effect on nearby property owners, the public, or other parties in the application proceeding. Operation of MPP will increase electrical production with slightly higher fuel consumption from the installation of upgraded original manufacturer’s equipment. The project, therefore, would have no adverse effects on nearby property owners, the public, or other parties in the application proceeding.

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Attachment 1
Detailed CalEEMod Report

MPP: Gas Path/Compressor Upgrade Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	MPP: Gas Path/Compressor Upgrade
Construction Start Date	7/1/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	20.2
Location	110 Magnolia Blvd, Burbank, CA 91502, USA
County	Los Angeles-South Coast
City	Burbank
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	3937
EDFZ	18
Electric Utility	Burbank Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	13.1	User Defined Unit	0.00	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.63	4.72	31.0	39.0	0.06	1.63	1.47	3.10	1.50	0.35	1.85	7,640	0.32	0.19	7,710
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.59	4.71	30.6	37.8	0.06	1.62	1.36	2.98	1.49	0.32	1.82	7,172	0.30	0.13	7,217
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.46	1.23	7.98	9.91	0.01	0.42	0.35	0.77	0.39	0.08	0.47	1,879	0.08	0.03	1,892
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.27	0.22	1.46	1.81	< 0.005	0.08	0.06	0.14	0.07	0.02	0.09	311	0.01	0.01	313

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	5.63	4.72	31.0	39.0	0.06	1.63	1.47	3.10	1.50	0.35	1.85	7,640	0.32	0.19	7,710

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	5.59	4.71	30.6	37.8	0.06	1.62	1.36	2.98	1.49	0.32	1.82	7,172	0.30	0.13	7,217
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.46	1.23	7.98	9.91	0.01	0.42	0.35	0.77	0.39	0.08	0.47	1,879	0.08	0.03	1,892
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.27	0.22	1.46	1.81	< 0.005	0.08	0.06	0.14	0.07	0.02	0.09	311	0.01	0.01	313

3. Construction Emissions Details

3.1. First week of Installation Process (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.11	4.28	29.8	31.8	0.05	1.62	—	1.62	1.49	—	1.49	5,663	0.23	0.05	5,683
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.57	0.61	< 0.005	0.03	—	0.03	0.03	—	0.03	109	< 0.005	< 0.005	109
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.10	0.11	< 0.005	0.01	—	0.01	0.01	—	0.01	18.0	< 0.005	< 0.005	18.0
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.48	0.43	0.43	6.96	0.00	0.00	1.31	1.31	0.00	0.31	0.31	1,383	0.06	0.05	1,403
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.05	0.01	0.73	0.28	< 0.005	0.01	0.16	0.17	0.01	0.04	0.05	594	0.03	0.09	624
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.12	0.00	0.00	0.02	0.02	0.00	0.01	0.01	25.5	< 0.005	< 0.005	25.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	11.4	< 0.005	< 0.005	11.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	4.22	< 0.005	< 0.005	4.28
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.89	< 0.005	< 0.005	1.98

3.3. Remaining Duration of Installation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.11	4.28	29.8	31.8	0.05	1.62	—	1.62	1.49	—	1.49	5,663	0.23	0.05	5,683
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.11	4.28	29.8	31.8	0.05	1.62	—	1.62	1.49	—	1.49	5,663	0.23	0.05	5,683
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	7.19	7.66	0.01	0.39	—	0.39	0.36	—	0.36	1,365	0.06	0.01	1,370
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.19	1.31	1.40	< 0.005	0.07	—	0.07	0.07	—	0.07	226	0.01	< 0.005	227
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.48	0.43	0.43	6.96	0.00	0.00	1.31	1.31	0.00	0.31	0.31	1,383	0.06	0.05	1,403
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.24	0.09	< 0.005	< 0.005	0.05	0.06	< 0.005	0.01	0.02	198	0.01	0.03	208
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.47	0.42	0.48	5.90	0.00	0.00	1.31	1.31	0.00	0.31	0.31	1,311	0.06	0.05	1,327
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.25	0.10	< 0.005	< 0.005	0.05	0.06	< 0.005	0.01	0.02	198	0.01	0.03	208
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.13	1.49	0.00	0.00	0.31	0.31	0.00	0.07	0.07	321	0.01	0.01	325
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	47.8	< 0.005	0.01	50.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.27	0.00	0.00	0.06	0.06	0.00	0.01	0.01	53.1	< 0.005	< 0.005	53.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	7.91	< 0.005	< 0.005	8.30

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequester ed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequester ed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
First week of Installation Process	Building Construction	7/1/2025	7/7/2025	7.00	7.00	Installation of AGP/AC and Disassembly of Existing Combustion Turbine (30 Trucks Per Week)
Remaining Duration of Installation	Building Construction	7/8/2025	10/3/2025	7.00	88.0	Installation of AGP/AC and Disassembly of Existing Combustion Turbine (10 Trucks Per Week)

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
First week of Installation Process	Cranes	Diesel	Average	1.00	24.0	367	0.29
First week of Installation Process	Forklifts	Diesel	Average	1.00	24.0	82.0	0.20
First week of Installation Process	Other General Industrial Equipment	Diesel	Average	1.00	24.0	35.0	0.34
First week of Installation Process	Air Compressors	Diesel	Average	1.00	24.0	37.0	0.48
First week of Installation Process	Other General Industrial Equipment	Diesel	Average	1.00	24.0	96.0	0.34
First week of Installation Process	Cranes	Diesel	Average	1.00	24.0	46.0	0.29
Remaining Duration of Installation	Cranes	Diesel	Average	1.00	24.0	367	0.29
Remaining Duration of Installation	Forklifts	Diesel	Average	1.00	24.0	82.0	0.20
Remaining Duration of Installation	Other General Industrial Equipment	Diesel	Average	1.00	24.0	35.0	0.34
Remaining Duration of Installation	Air Compressors	Diesel	Average	1.00	24.0	37.0	0.48
Remaining Duration of Installation	Other General Industrial Equipment	Diesel	Average	1.00	24.0	96.0	0.34
Remaining Duration of Installation	Cranes	Diesel	Average	1.00	24.0	46.0	0.29

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
First week of Installation Process	—	—	—	—
First week of Installation Process	Worker	100	18.5	LDA,LDT1,LDT2
First week of Installation Process	Vendor	0.00	10.2	HHDT,MHDT
First week of Installation Process	Hauling	8.57	20.0	HHDT
First week of Installation Process	Onsite truck	—	—	HHDT
Remaining Duration of Installation	—	—	—	—
Remaining Duration of Installation	Worker	100	18.5	LDA,LDT1,LDT2
Remaining Duration of Installation	Vendor	0.00	10.2	HHDT,MHDT
Remaining Duration of Installation	Hauling	2.86	20.0	HHDT
Remaining Duration of Installation	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Industrial	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	1,130	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	11.7	annual days of extreme heat
Extreme Precipitation	7.30	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	78.2
AQ-PM	67.9

AQ-DPM	77.2
Drinking Water	87.9
Lead Risk Housing	74.5
Pesticides	0.00
Toxic Releases	69.4
Traffic	76.5
Effect Indicators	—
CleanUp Sites	97.8
Groundwater	70.7
Haz Waste Facilities/Generators	92.6
Impaired Water Bodies	72.2
Solid Waste	35.7
Sensitive Population	—
Asthma	26.2
Cardio-vascular	25.7
Low Birth Weights	37.0
Socioeconomic Factor Indicators	—
Education	32.2
Housing	47.6
Linguistic	52.9
Poverty	54.9
Unemployment	36.4

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	70.57615809

Employed	45.27139741
Median HI	57.97510586
Education	—
Bachelor's or higher	67.32965482
High school enrollment	18.81175414
Preschool enrollment	83.27986655
Transportation	—
Auto Access	25.92069806
Active commuting	60.09239061
Social	—
2-parent households	50.81483383
Voting	57.55164892
Neighborhood	—
Alcohol availability	20.1334531
Park access	29.03888105
Retail density	81.53471064
Supermarket access	69.75490825
Tree canopy	74.13063005
Housing	—
Homeownership	40.94700372
Housing habitability	46.7855768
Low-inc homeowner severe housing cost burden	59.42512511
Low-inc renter severe housing cost burden	25.31759271
Uncrowded housing	60.05389452
Health Outcomes	—
Insured adults	40.74169126
Arthritis	42.6
Asthma ER Admissions	58.7

High Blood Pressure	49.4
Cancer (excluding skin)	21.2
Asthma	76.7
Coronary Heart Disease	43.7
Chronic Obstructive Pulmonary Disease	62.6
Diagnosed Diabetes	64.3
Life Expectancy at Birth	40.9
Cognitively Disabled	39.7
Physically Disabled	28.8
Heart Attack ER Admissions	75.7
Mental Health Not Good	71.0
Chronic Kidney Disease	55.3
Obesity	64.2
Pedestrian Injuries	50.7
Physical Health Not Good	64.0
Stroke	58.2
Health Risk Behaviors	—
Binge Drinking	32.5
Current Smoker	70.0
No Leisure Time for Physical Activity	73.6
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	19.0
Elderly	23.9
English Speaking	56.8
Foreign-born	53.5
Outdoor Workers	71.9

Climate Change Adaptive Capacity	—
Impervious Surface Cover	28.4
Traffic Density	78.5
Traffic Access	70.5
Other Indices	—
Hardship	44.9
Other Decision Support	—
2016 Voting	47.8

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	63.0
Healthy Places Index Score for Project Location (b)	55.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification

Construction: Construction Phases	Project details of phase description and known duration of working days were provided by the client.
Land Use	Per the California Energy Commision website, the Magnolia Power Project is listed as encompassing approximately 3 acres.
Construction: Off-Road Equipment	Known equipment and hours used per day were identified by the client. The type categorized by CalEEmod is in parenthesis. Mobile Crane (Cranes), Warehouse Style Forklift (Forklifts), Welding Machine (Other General Industrial Equipment), Light Plant (Air Compressors), Rough Terrain Heavy Duty Forklift (Other General Industrial Equipment), Telescoping Boom Lift (Cranes)
Construction: Trips and VMT	50 workers are expected to be onsite during 2, 12-hour shifts. The 100 one-way trips account for travel to and from site per day. 30 haul trucks are expected to be arriving to site within the first 7 days of the project. The 8.57 hauling trips per day account for the trucks travel to and from site. That number was then taken and doubled, to account for the trucks travel to and from site. 10 haul trucks are expected to be arriving per week for the remaining 88-day duration of the project. This equates to 1.43 haul trucks arriving to site per day. That number was then taken and doubled, to account for the trucks travel to and from site.

Attachment 2
MPP Air Permit Application

APPLICATION FOR TITLE V PERMIT MODIFICATION

MAGNOLIA POWER PROJECT (MPP) UPGRADE 2024
SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY

Prepared for:

Magnolia Power Project, SCPPA
164 West Magnolia Boulevard
Burbank, CA 91502
Facility ID: 128243

Submitted to:

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4182

December 2024

PREPARED BY:

EMP

ENVIRONMENTAL MANAGEMENT PROFESSIONALS, LLC
22811 MADRONA AVENUE, TORRANCE - CALIFORNIA 90505
Tel/Fax: (310) 539-0606; e-mail: krishnanand44@msn.com

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ACRONYMS AND ABBREVIATIONS

BACT	Best Available Control Technology
BWP	Burbank Water and Power
BSER	Best System of Emission Reduction
CAM	Compliance Assurance Monitoring
CARB	California Air Resources Board
CCGF	Combined Cycle Electric Power Generating Facility
CEMS	Continuous Emissions Monitoring System
CEQA	California Environmental Quality Act
CFH	cubic feet per hour
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CT	combustion turbine
CTG	combustion turbine generator
DACFM	dry actual cubic feet per minute
DAHS	Data Acquisition & Handling System
DB	Duct Burner
DLN	Dry Low NOx
DSCF	dry standard cubic feet
DSCFM	dry standard cubic feet per minute
EGU	Electric Utility Generating Units
EPA	United States Environmental Protection Agency
GHG	Greenhouse Gases
gpm	gallons per minute
GT	Gas Turbine
GWP	Global Warming Potential
HAP	hazardous air pollutant
HHV	higher heat value
HI	Hazard Index
HRA	Health Risk Assessment
HRSG	Heat Recovery Steam Generator
Hz	Hertz
LAER	Lowest Achievable Emissions Reduction
LHV	lower heating value
MPP	Magnolia Power Project
MICR	maximum individual cancer risk
MW	megawatt
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NH_3	ammonia

ACRONYMS AND ABBREVIATIONS (CONTINUED)

NHMC	non-methane hydro-carbon
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
N_2O	nitrous oxide
NSPS	New Source Performance Standard
O_2	oxygen
PFC	perflurocarbons
PM	particulate matter
PM2.5	particulate matter of 2.5 microns or less in diameter
PM10	particulate matter of 10 microns or less in diameter
ppbvd	parts per billion by volume, dry basis
ppmvd	parts per million by volume, dry basis
PSD	prevention of significant deterioration
RECLAIM	Regional Clean Air Incentives Market
rpm	revolutions per minute
RTCs	Reclaim Trading Credits
RTU	remote terminal unit
SCAB	South Coast Air Basin
South Coast AQMD	South Coast Air Quality Management District
SCPPA	Southern California Public Power Authority
SCR	selective catalytic reduction
SIP	State Improvement Plan
SO_2	sulfur dioxide
SO_x	oxides of sulfur
STG	steam turbine generator
TAC	toxic air contaminant
T-BACT	Best Available Control Technology for Toxics
VOC	volatile organic compound

SECTION 1
INTRODUCTION

The Southern California Public Power Authority (SCPPA) owns the Magnolia Power Project (MPP), a combined cycle electrical power generating facility (CCGF). The MPP is located in the City of Burbank and is operated by the City of Burbank, Department of Water & Power (BWP). The South Coast Air Quality Management District (South Coast AQMD) issued a Permit to Construct and a Temporary Permit to Operate the CCGF on May 27, 2003. The MPP was commissioned in September 2005 and placed under operation after commissioning.

The MPP electric power generating facility consists of 1-on-1, combined cycle Power Island. The power island includes a natural gas fired, General Electric Model PG7241FA combustion turbine generator (CTG). The gas turbine (GT) exhausts into a fired (using a duct burner) heat recovery steam generator (HRSG). Steam from the HRSG is admitted into a steam turbine generator (STG). Natural gas is the only fuel utilized by the gas turbine and the duct burner.

Oxides of nitrogen (NOx) emissions from the GT are controlled by dry low NOx (DLN2.6e) combustors and a post combustion emission control system. The post-combustion control system is the selective catalytic reduction (SCR) system. Carbon monoxide (CO) and volatile organic compounds (VOC) emissions from the CCGF are controlled by CO oxidation catalyst.

The last revision to the MPP Title V Permit was made by the South Coast AQMD in 2020 and the MPP has been in operation in compliance with the revised permit conditions.

It should be noted that BWP also operates a peaking turbine and two utility boilers on this site as well. The equipment is permitted under a different Facility ID Number (ID# 25683). The equipment under ID#25638 is owned by the City of Burbank and is considered a separate facility for permitting purposes.

The SCPPA is proposing to engineer/design and deploy targeted upgrades at the existing Magnolia Power Project (MPP), to provide operational capacity/output and energy efficiency improvements by deploying [Advanced Gas Path (AGP) and Advancements to the Compressor] packages to the existing system. These improvements will result in an overall increase of additional power production, to support improved resiliency and state level resource adequacy. Power generated by the system will be made available for multiple uses during normal operating hours, including during peak and high peak periods. The details of the proposed upgrades are described in Section 2.

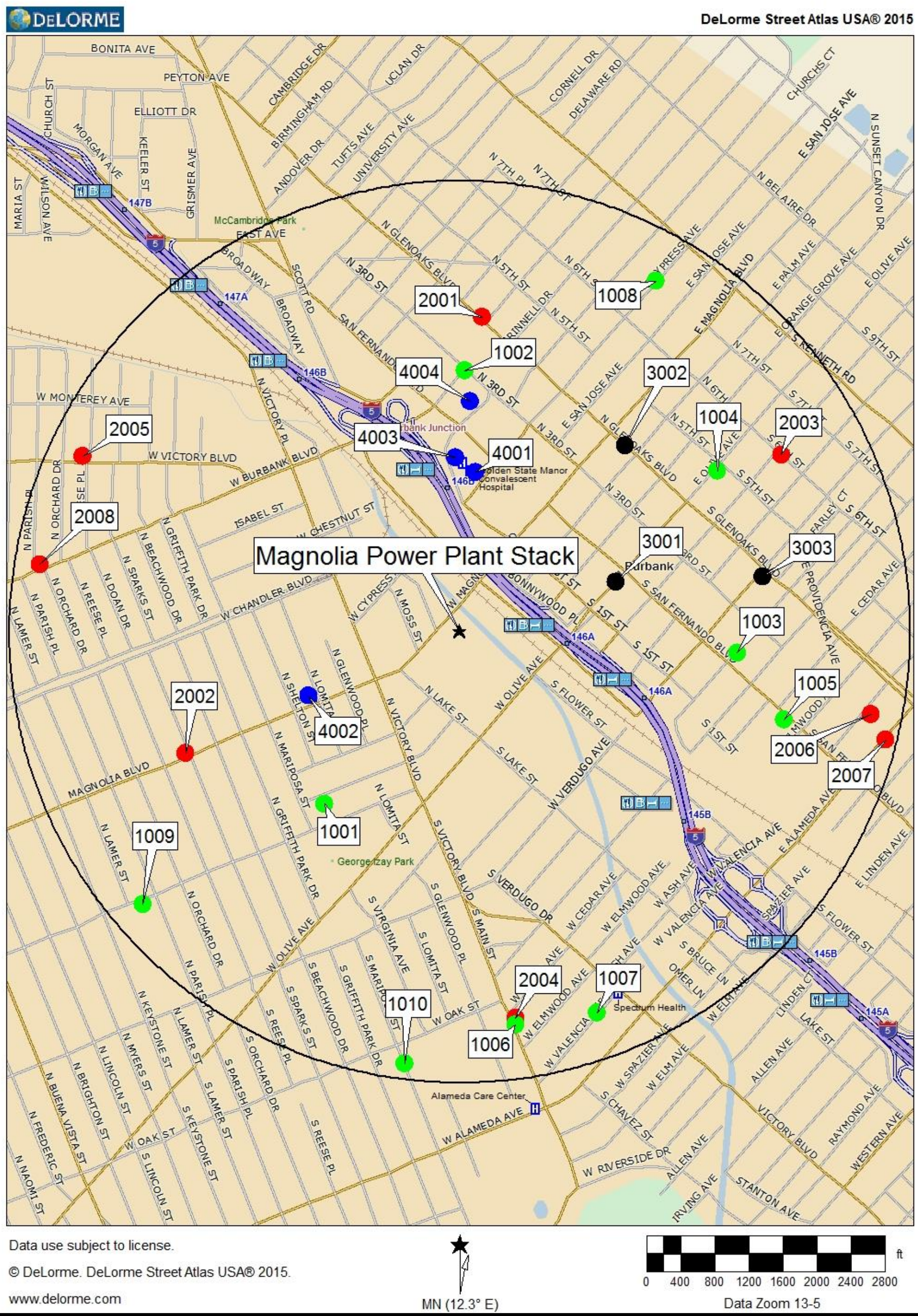
1.1 Location Details Of The Magnolia Power Project

MPP is located at 164 West Magnolia Boulevard in the City of Burbank, California, (164 West Magnolia Boulevard, Burbank, CA 91502) within an existing 23-acre power generating facility. The facility is located approximately 2,000 feet southwest of the Burbank City Hall, and it is bordered by Magnolia Blvd., on the north, Lake Street on the west, Flower Street on the east, and Olive Avenue on the south. The facility is bordered by industrial properties on all sides, and the nearest sensitive receptor (school) is located approximately 2,500 feet southwest of the facility. The site location map is shown in Figure 1-1. The MPP site plan is presented in Figure 1-2.

1.2 Organization Of The Permit Application

Additional details of all the changes discussed above, including the process description of the MPP is provided in Section 2. Emission details for the existing and upgraded MPP are presented in Section 3. The regulatory compliance evaluation is presented in Section 4. Section 5 includes the proposed revised permit conditions, and Section 6 provides information regarding the permit fees.

Appendix A includes the emission details and references. All the South Coast AQMD required forms are provided in Appendix B. A selected air dispersion modeling output files, air dispersion modeling and health risk assessment protocol, and a partial current facility permit for the MPP are included in Appendix C.



- Pre-Schools and Day-Cares
- Elementary/Intermediate/High Schools
- College or University
- Hospitals

Figure 1-1
Site Location Map
Magnolia Power Project

Legend

MPPSTCK Site

0 200 Meters

Figure 1-2
Site Plan Magnolia Power Project

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DRAWN BY: Flannery

SECTION 2
PROCESS DESCRIPTION

The MPP electric power generating facility consists of 1-on-1, combined cycle Power Island. The power island includes a natural gas fired, General Electric Model PG7241FA (7FA.03) combustion turbine generator. The gas/combustion turbine (GT) is rated at 1,787 MMBtu/hr (HHV). The GT exhausts into a fired (using a duct burner) heat recovery steam generator (HRSG). Steam from the HRSG is admitted into a steam turbine generator (STG). The duct burner (DB) is rated at 583 MMBtu/hr (HHV). Natural gas is the only fuel utilized by the gas turbine and the duct burner. Total gross power output [from the CTG (181.1 MW) and the STG (142.0 MW)] is 323.1 MW.

NOx emissions from the GT are controlled by dry low NOx (DLN2.6+) combustors and a post-combustion emission control system. The post-combustion control system is a selective catalytic reduction (SCR) system. NOx emissions from the GT and the duct burner are limited to 2 ppmv, 3-hour average, dry basis, at 15% O_2.

CO and volatile organic compounds (VOC) emissions from the CCGF are controlled by a CO oxidation catalyst. Emissions for both CO and VOC are limited to 2 ppmv, 1-hour average, dry basis, at 15% O_2.

Table 2-1 provides the specifications of the exiting MPP equipment.

2.1 Proposed Upgrades to the Existing MPP Combustion System

As mentioned in Section 1, SCPPA is proposing to upgrade the MPP to provide operational capacity/output and energy efficiency improvements by deploying the General Electric (GE) Advanced Gas Path Tech Package (AGP) and Advanced Compressor to the existing MPP system. Additional details of the AGP and Advanced Compressor packages are provided below.

7F AGP Tech Package

The 7F AGP program utilizes 7F.04 Hot Gas Path (HGP) technology incorporating cooling and sealing enhancements and advanced materials to allow efficient operation at increased firing temperatures. Together with the 2.6+ combustor (already installed) and model based controls architecture, the AGP uprate delivers improved output and heat rate while increasing hardware inspection intervals and replacement lives; all while maintaining base load emissions levels.

The 7F AGP Tech offering builds on the mature and field-proven 7F AGP product by incorporating latest generation HGP technology, further optimizing cooling flows and materials. This allows for increased firing temperature capability and performance while maintaining hardware intervals when combined with the 7F DLN 2.6+ combustion system.

The Advanced Hot Gas Path includes a complete set of 7FA.04 design HGP components, to include first, second and third stage nozzles, buckets, and shrouds. A new support ring for the first stage nozzle is also included.

According to the General Electric, technological enhancements included in the AGP revolve around application of advanced materials used in FB, H-class, and Aviation engines as well as optimization of secondary cooling and sealing flows. Additionally, 3D aerodynamic design methodology has been applied to the first stage nozzle and bucket to further enhance efficiency.

The implementation of the Advanced Gas Path will provide the following benefits:

- Significant increase in base load output capacity of the gas turbine.
- Increase exhaust available energy to bottoming cycle for increased steam turbine output for combined cycle applications.

Advanced Compressor

The upgrade to advanced compressor consists of retrofitting a 7FA.05 compressor, GE's most advanced high efficiency compressor technology along with a Gen-V turbine rotor, into 7FA.03 gas turbines combined AGP Tech Package in order to provide significant improvements in output and heat rate, as well as enhancements in reliability and maintainability.

The 7FA.05 compressor consists of 14 stages specifically modeled for a higher flow rate, enabling greater output. The compressor flow path has been planned to accommodate inlet conditioning with improved leading edge erosion tolerance.

The rotatory and stationary airfoils incorporate superfinish three-dimensional aerodynamic shape for reduced degradation and improved fuel efficiency. The first three stages of the compressor contain variable stator vanes that provide the gas turbine with a wider operating envelope and enhance hot-day and part-load efficiency.

The rotor is bolted steel construction with two sets of durable concentric tie bolts specifically planned to improve the aerodynamic flow path. The rotor blades and wheels incorporate a circumferential dovetail design that permits removing the blades without pulling the rotor from the casing, thereby improving maintainability.

The compressor casings have been built to match the rotor and the existing DLN2.6+ combustor interface. The inlet casing and mid compressor casing incorporate provisions for an advanced Blade Health Monitoring (BHM) system for stages 1 through 3 rotor blades. Furthermore, additional borescope holes have been included in the compressor casings to simplify and fortify inspections.

Implementation of the 7FA.05 compressor upgrade will provide the following benefits:

- Increased base load output & efficiency
- Improved part load efficiency
- Field replaceable compressor rotor blades
- Improved hot day performance
- Increase exhaust available energy to bottoming cycle for increased steam turbine output for combined cycle applications

In summary, the power output from the upgraded MPP GT will increase to 211.72 MW (Gross). In addition, the maximum fuel rating for the GT will increase to 2,103 MM Btu/hr HHV,

It is important to note that after the upgrades to MPP are completed, MPP will continue to operate with the currently permitted NOx emission limit of 2 ppmv, dry basis. at 15% O_2. In addition, the MPP CCGF will continue to comply with the currently permitted CO and VOC emission limits of 2 ppmv, 1-hour average, dry basis, at 15% O_2.

Table 2-2 provides the specifications of the exiting MPP equipment.

2.2 Exhaust Stack

The MPP is equipped with a 150-feet tall, 19-feet diameter stack. The base elevation for the stack is 560 ft.

Table 2-1
MPP Existing Equipment Specifications[a]

Gas Turbine Specs

Specification	
Manufacturer/Model	GE/PG72417FA
Fuel Type	Pipeline natural gas
Maximum Heat Input Rating (GT only)	1787 MMBtu/hr HHV
Maximum Fuel Consumption (GT only)	1.702 MMscf/hr @ 1050 Btu/scf
GT Gross Power Output	181.1 MW
Steam Turbine Gross Power Output	85 MW (no DB firing) and 142 MW (with DB firing)
Duct Burner Max Heat Input	583 MMBtu/hr HHV
Duct Burner Max Fuel Consumption	0.555 MMscf/hr @ 1050 Btu/scf
Gross Plant Power Output	323.1 MW
Maxim Heat Input Rating (GT + DB)	2370 MMBtu/hr HHV
Maximum Fuel Consumption (CGT + DB)	2.257 MMscf/hr @ 1050 Btu/scf
NOx Combustion Control	DLN 9 ppm
Net Plant Heat Rate, HHV	7,335 Btu/kWh
Net Plant Efficiency, HHV	46.5%

Selective Catalytic Reduction Specs

Specification	
Manufacturer	Cormetech
Catalyst Material and Catalyst Volume	Vanadium/Titanium Oxide; 1,100 ft^3
Maximum Temperature	850 ^oF
Maximum Temperature for NH_3 Injection	450 ^oF
Space Velocity/Ammonia Injection Rate	65,300 hr-1/300 lb/hr of 19% aqueous NH_3
Ammonia Slip/Outlet NOx	5 ppm (1-hr average)/2 ppm (3-hr average) @ 15% O_2
Pressure Drop Across SCR	About 4 inch water
[a] SCAQMD Statement of Basis, Proposed Minor Permit Revision, MPP Upgrade, 12/26/2019	

Table 2-2
MPP Upgraded Equipment Specifications

Gas Turbine Specs

Specification	
Manufacturer/Model	GE/PG72417FA
Fuel Type	Pipeline natural gas
Maximum Heat Input Rating (GT only)	2,103 MMBtu/hr HHV
Maximum Fuel Consumption (GT only)	2.003 MMscf/hr @ 1050 Btu/scf
GT Gross Power Output	211.72 MW Gross
Steam Turbine Gross Power Output	85 MW (no DB firing) and 142 MW (with DB firing)
Duct Burner Max Heat Input	583 MMBtu/hr HHV
Duct Burner Max Fuel Consumption	0.555 MMscf/hr @ 1050 Btu/scf
Gross Plant Power Output	361.829 MW at 22^{o}F (Ref. 13)
Maxim Heat Input Rating (GT + DB)	2686 MMBtu/hr HHV
Maximum Fuel Consumption (GT + DB)	2.558 MMscf/hr @ 1050 Btu/scf
NOx Combustion Control	DLN 9 ppm
Net Plant Heat Rate, HHV	7,208 Btu/kWh at 22^{o}F (Ref. 13)
Net Plant Efficiency, HHV	47.3% at 22^{o}F (Ref. 13)

Selective Catalytic Reduction Specs

Specification	Note: There will be no changes to the SCR System
Manufacturer	Cormetech
Catalyst Material and Catalyst Volume	Vanadium/Titanium Oxide; 1,100 ft^3
Maximum Temperature	850 ^{o}F
Maximum Temperature for NH_3 Injection	450 ^{o}F
Space Velocity/Ammonia Injection Rate	65,300 hr-1/300 lb/hr of 19% aqueous NH_3
Ammonia Slip/Outlet NOx	5 ppm (1-hr average)/2 ppm (3-hr average) @ 15% O_2
Pressure Drop Across SCR	About 4 inch water

SEGTION 3
EMISSION CALCULATIONS

The operation of the MPP gas turbine and the duct burner will result in the emissions of criteria air pollutants, toxic air contaminants (TACs), hazardous air pollutants (HAPs) and greenhouse gases (GHGs). Criteria pollutant emissions from the gas turbine are affected by several factors; most important is the mode of operation. The two basic operational modes for the gas turbine, from an emissions standpoint, are startup/shutdown and normal operation. In addition to the above operating scenarios, the gas turbine will also go through recommissioning operation after completion of the proposed upgrades (installation of the Advanced Gas Path Tech Package and the Advanced Compressor). During the recommissioning operation, tests will be performed on the upgraded MPP to verify its performance and make any needed adjustments. Following recommissioning, the MPP will be ready for normal operation. It is important to note that the Selective Catalytic Reduction (SCR) and the carbon monoxide (CO) catalyst systems will be operational during the recommissioning operation and will reduce the emissions of oxides of nitrogen (NOx), CO and volatile organic compounds (VOC). However, the SCR and the CO catalyst systems may not be operating at their full control efficiencies when the gas turbine will be operating at low loads during the recommissioning operation. Additional details of the recommissioning and operation of the upgraded MPP are provided below.

The current permit for the existing MPP is based on the following normal operating schedule: (a) 24 hours/day and 7 days/week; (b) 1,000 hours of duct burner operation in a year; and (c) 95% operation of the gas turbine in a year [i.e. 8,322 hours of operation in a year (8760 x 0.95 = 8,322 (see Reference 1 in Appendix A-27)]. The facility is also permitted to have up to 5 startups and 5 shutdowns during a month and 60 startups and 60 shutdowns during the year. A summary of the operating scenario for the existing MPP is provided in Table 3-1 (see Appendix A-1 for additional information).

The recommissioning operation for the upgraded MPP will be performed by General Electric (GE). The details of the recommissioning operation are provided in Table 3-2 (see Appendix A-2 for additional information). It may be noted that on the 11th day of recommissioning, the MPP will undergo performance testing for 12 hours, and after the performance testing MPP will be ready for normal operation. Note that the gas turbine will not be continuously "ON" throughout the recommissioning operation for 252 hours [(10 x 24) + 12 = 252] hours. The gas turbine will be shutoff for 51 hours out of the recommissioning period of 252 hours. Therefore, the gas turbine will be "ON" for only 201 hours (252 - 51 = 201 hours) during the recommissioning operation. The recommissioning information provided by GE was slightly rearranged and some of the recommissioning phases which were of less than 1-hr duration were merged. This rearrangement was made for only dispersion modeling analysis. In addition, the day of task was renumbered to better identify the recommissioning scenarios. The rearranged recommissioning information is provided in Appendix A-3.

It is being proposed by the BWP to increase the operating hours of the gas turbine to allow for a full year of operation and avoid unnecessary shutdowns. The proposed increase is from 8,322 hours to 8,508 hours in a year after completing the MPP upgrades. This is based on the following calculations (see Reference 3 in Appendix A-27):

Total number of hours in a year	= 8,760
Planned outage hours per year	= 252
Gas turbine operating hours in a year	= 8760 – 252 = **8,508 hours/year**

Therefore, the upgraded MPP will operate in non-recommissioning mode for only 8,256 hours (8,508 - 252 = 8,256) during the first year of operation after MPP upgrades. It is conservatively assumed that the upgraded MPP will undergo 60 starts, 60 shutdowns and 1,000 hours of duct burner operation during the first year of operation. The upgraded MPP will also be in normal operation (without recommissioning, startup, shutdown and duct burner operation) for 6,866 hours during the first year of operation (8,508 – 252 - 360 - 30 - 1000 = 6,866 hrs). A summary of the above operations is provided in Table 3-3. Additional details of the first year operation of the upgraded MPP are provided in Appendix A-1.

A summary of the operating scenario for the upgraded MPP for the 2nd year of operation is provided in Table 3-4. Additional details of the second year of operation of the upgraded MPP are provided in Appendix A-1. It should be noted that no recommissioning operation will be performed during the second year of MPP operation.

The information provided in Tables 3-1 through 3-4 was used for calculating the criteria air pollutants, HAPs and GHGs emissions from the existing and upgraded MPP facility.

3.1 Criteria Pollutants Emissions - Existing MPP Facility

The details of the criteria pollutant emissions are provided below for the various operating scenarios of the existing MPP facility (currently permitted MPP facility).

3.1.1 Normal Operation Emissions

MPP is permitted to operate with and without the duct burner. Tables 3-5 through 3-7 present the hourly emissions of criteria pollutants during the normal operation of the MPP without the duct burner, only duct burner, and normal operation with the duct burner. All the criteria pollutant emission information was obtained from the South Coast AQMD Proposed Minor Permit Revision, December 26, 2019 (see Reference 2 in Appendix A-27*)*.

3.1.2 Startup Emissions

Table 3-8 presents the estimated emissions for the MPP during a startup. This information was obtained from the South Coast AQMD Proposed Minor Permit Revision, December 26, 2019 (see Reference 2 in Appendix A-27).

3.1.3 Shutdown Emissions

Table 3-9 presents the estimated emissions for the MPP during a shutdown operation. Table 3-9 also presents emissions during the hourly (60 minute) operation, which includes 30 minutes of shutdown emissions and 30 minutes of normal operation with duct burner operation emissions.

This information was obtained from the South Coast AQMD Proposed Minor Permit Revision, December 26, 2019 (see Reference 2 in Appendix A-27).

A summary of hourly criteria pollutant emissions from the existing MPP facility is presented in Table 3-10 for the normal operating scenario of the MPP as well as for the startup and shutdown scenarios. As mentioned above, all the information provided in Table 3-10 was obtained from Reference 2 in Appendix A-27.

Additional details of the hourly criteria pollutant emissions are provided in Appendix A-4.

3.1.4 Maximum Daily Criteria Pollutant Emissions (Existing MPP Facility)

Table 3-11 presents the permitted maximum daily criteria pollutant emission limits for the existing MPP facility. Maximum daily CO, NOx, and VOC emissions are based on the following operating scenario: one startup, one shutdown and the remaining hours in normal operation. It was also assumed that the duct burner would operate for 12 hours in a day.

Maximum daily PM10 and SOx emissions are based on the following operating scenario: normal operational mode for all the 24 hours of the day, including duct burner operation for 12 hours in the day.

Additional details of the daily criteria pollutant emissions are provided in Appendix A-5.

3.1.5 Maximum Monthly Criteria Pollutant Emissions (Existing MPP Facility)

Table 3-11 presents the permitted criteria pollutant monthly emission limits for the existing MPP facility. Maximum monthly CO, NOx, and VOC emissions are based on the following operating scenario: 5 startup, 5 shutdown and the remaining hours in normal operation. It was also assumed that the duct burner would operate for 240 hours in the month. This information was obtained from the South Coast AQMD Proposed Minor Permit Revision, December 26, 2019 (see Reference 2 in Appendix A-27).

Maximum monthly PM10 and SOx emissions are based on the following operating scenario: normal operational mode for all the 720 hours of the month, including duct burner operation for 240 hours in the month.

Additional details of the monthly criteria pollutant emissions are provided in Appendix A-6.

3.1.6 Annual Criteria Pollutant Emissions (Existing MPP Facility)

Table 3-11 also presents the permitted annual criteria pollutant emissions for the existing MPP facility. Annual emissions are based on the 95 percent availability of the existing MPP facility power generating system (annual operating hours = 8,760 x 0.95 = 8,322 hrs). This information was obtained from the South Coast AQMD Proposed Minor Permit Revision, December 26, 2019 (see Reference 2 in Appendix A-27).

For estimating annual CO, NOx and VOC emissions, it was assumed that the MPP will undergo 60 startups, 60 shutdowns and operate the remaining hours in normal operational mode. It was also assumed that the duct burner will operate for 1,000 hours during the year. For estimating maximum PM10 and SOx emissions, it was assumed that the MPP will operate in normal operational mode throughout the year (8,322 hrs), which will include the duct burner operation for 1,000 hours during the year.

Additional details of the annual criteria pollutant emissions are provided in Appendix A-7.

3.2 Criteria Pollutants Emissions - Recommissioning Operation

The details of the criteria pollutant emissions during the 2024 recommissioning operation are provided below for the MPP facility.

The recommissioning operation will involve all the steps from the first start of the gas turbine after the upgrades to the MPP through the performance testing. GE has provided a schedule for recommissioning of the upgraded MPP. According to this schedule, recommissioning operation will last for 11 days (see Reference 4 in Appendix A-27). GE has provided criteria pollutant emissions, except for SOx emissions for the 2024 recommissioning operation. Therefore, SOx emissions were estimated separately and included in Appendix A-8. Note that all SOx emissions for the currently permitted MPP facility are based on emission factor of 0.75 lb/MMscf. However, for estimating SOx emissions for recommissioning as well as normal operation of the upgraded MPP, SOx emission factor of 0.60 lb/MMscf was used. This emission factor is based on the data provided by the South Coast Air Quality Management District (see Reference 5 in Appendix A-27).

The criteria pollutant emissions data provided in Appendix A-8 was used to estimate criteria pollutant emissions during the full recommissioning operation and is summarized in Table 3-12.

3.2.1 Maximum Daily Criteria Pollutant Emissions during Recommissioning Operation

Table 3-13 presents the highest daily CO, NOx and VOC emissions during the recommissioning operation. The daily CO, NOx and VOC emissions were calculated using the data provided by GE. The maximum daily PM10 and SOx emissions are for the Day 11 which includes 12 hours of operation of the gas turbine with the duct burner. Additional details of the daily criteria pollutant emissions during recommissioning operation are provided in Appendix A-9.

3.2.2 Criteria Pollutant Emissions during the Reorganized Recommissioning Operation

Table 3-14 presents a summary of the criteria pollutant emissions for the reorganized recommissioning operation. This table also includes information for the stack exhaust parameters during the recommissioning operation. Additional details of the reorganized recommissioning operation emissions are provided in Appendix A-10.

3.2.3 Hourly Criteria Pollutant Emissions during the Reorganized Recommissioning Operation

Table 3-15 presents a summary of the hourly criteria pollutant emissions for the reorganized recommissioning operation. The hourly criteria pollutant emissions for the reorganized recommissioning operation are based on the duration of the task and emissions data provided in Table 3-14.

3.3 Criteria Pollutants Emissions - Post-Recommissioning Operation

3.3.1 Normal Operation Emissions

After completion of the recommissioning operation the GT maximum hourly fuel firing rate will increase from 1,787 MMBtu/hr to 2,103 MMBtu/hr (HHV) (see Reference 6 in Appendix 27). The stack exhaust oxygen concentration on wet basis will be 12.12% (see Reference 7 in Appendix 27). Furthermore, there will be a change in the annual operating schedule of the MPP gas turbine (increase in the annual operation of the gas turbine from 7,322 hrs/yr to 7,508 hrs/yr; see Appendix A-1).

There will be no change in the duct burner firing rate. However, the stack exhaust oxygen concentration on wet basis will reduce to 10.50% (see Reference 7 in Appendix 27).

PM10 emissions during the normal operation of the MPP for the current permit are based on the following emission factors (EF): 0.0066 lb/MMBtu for the combustion turbine without the duct burner and 0.0076 lb/MMBtu for the combustion turbine with the duct burner. BWP has been source testing the MPP for PM10 emissions in addition to other criteria pollutants since the last 15 years to comply with the South Coast AQMD issued Title V Permit conditions. A summary of these source test results indicated a wide variation in the source tested PM10 emission factors. The maximum PM10 EF for the combustion turbine was identified as 0.002 lb/MMBtu and for the combustion turbine with duct burner was identified as 0.001 lb/MMBtu (see Reference 10 in Appendix 27). These source test results indicated that the source tested maximum PM10 EF was about 3 times lower than the PM10 EF which was the basis for the current Title V permit issued by the South Coast AQMD. BWP is therefore proposing to use a lower PM10 EF for the current permit application (this permit application) which is being prepared for submission to the South Coast AQMD. This change may impact the PM10 Emission Reduction Credit (ERC) requirements for the upgraded MPP.

Because it would take some time for the South Coast AQMD to review all the MPP past source test data before deciding on using a different PM10 EF for the current MPP permit application, the following PM10 conservative EFs are being used for estimating PM10 emissions for the MPP upgrade project permit application:

Combustion turbine without the duct burner = [0.0066 – (0.25 x 0.0066)] = 0.00495 lb/MMBtu

Combustion turbine with the duct burner = [0.0076 – (0.25 x 0.0076)]= 0.0057 lb/MMBtu

The above suggested EFs represent a reduction of 25% of the currently used PM10 EFs for the MPP project. Note that BWP will modify the PM10 emission calculations and regulatory analysis for the MPP upgrade project based on the final decision made by the South Coast AQMD during the review of the permit application.

Tables 3-16 through 3-18 present the hourly emissions of criteria pollutants during the normal operation of the MPP with and without the duct burner after recommissioning. Additional details of the hourly criteria pollutant emissions are provided in Appendices 14B, 15B and 16B.

3.3.2 Startup Emissions (After Upgrade)

According to the information provided by GE, the existing startup emissions may increase by a factor of 2103 MMBtu/hr (maximum fuel fired in the gas turbine after recommissioning/ 1,787 MMBtu/hr (maximum fuel fired in the gas turbine before recommissioning (see Reference 6 in Appendix 27). Table 3-19 presents the estimated emissions for the MPP during a startup after recommissioning. Additional details of the criteria pollutant emissions during the startup are provided in Appendix A-11.

3.3.3 Shutdown Emissions (After Upgrade)

Table 3-20 presents the estimated emissions for the MPP during a shutdown operation. Table 3-20 also presents emissions during the hourly (60 minute) operation, which includes 30 minutes of shutdown emissions and 30 minutes of normal operation with duct burner operation emissions. Additional details of the criteria pollutant emissions during the shutdown are provided in Appendices A-12 and A-13.

A summary of criteria pollutant emissions for the upgraded MPP facility during the normal operating scenario as well as for the startup and shutdown scenarios are provided in Table 3-21.

Additional details of the normal operating scenario, including startup and shutdown are provided in Appendix A-17.

3.3.4 Maximum Daily Criteria Pollutant Emissions (Upgraded MPP Facility under Recommissioning)

Table 3-13 presents the maximum daily criteria pollutant emission estimated for the upgraded MPP facility under recommissioning. Additional details of these emissions are provided in Appendix A-9.

3.3.5 Maximum Daily Criteria Pollutant Emissions (Upgraded MPP Facility after Recommissioning)

Table 3-22 presents the maximum daily criteria pollutant emission estimated for the upgraded MPP facility. Maximum daily CO, NOx, and VOC emissions are based on the following operating scenario: one startup, one shutdown and the remaining hours in normal operation. It was also assumed that the duct burner would operate for 12 hours in a day.

Maximum daily PM10 and SOx emissions are based on the following operating scenario: normal operational mode for all the 24 hours of the day, including duct burner operation for 12 hours in the day.

Additional details of the daily criteria pollutant emissions are provided in Appendix A-18.

3.3.6 Maximum Monthly Criteria Pollutant Emissions (Upgraded MPP Facility, Recommissioning Operation Included)

The maximum monthly criteria pollutant emission estimated for the upgraded MPP facility which would include recommissioning operations are provided in Table 3-23.

Maximum monthly CO and VOC emissions are based on recommissioning operation (252 hours), 5 startups, 5 shutdowns, 240 hours of normal operation with duct burner and the remaining hours (195.5 hours) in normal operation without the duct burner).

Maximum monthly PM10 and SOx emissions are based on the following operating scenario: normal operation for all the 720 hours of the month, including duct burner operation for 240 hours in the month.

Additional details of the monthly criteria pollutant emissions (that will include recommissioning operation) are provided in Appendix A-19.

3.3.7 Maximum Monthly Criteria Pollutant Emissions (Upgraded MPP Facility, no Recommissioning Operation)

The maximum monthly criteria pollutant emission estimated for the upgraded MPP facility which would not include recommissioning operations are provided in Table 3-24.

Maximum monthly CO and VOC emissions are based on 5 startups, 5 shutdowns, 240 hours of normal operation with duct burner and the remaining hours (447.5 hours) in normal operation without the duct burner.

Maximum monthly PM10 and SOx emissions are based on the following operating scenario: normal operation for all the 720 hours of the month, including duct burner operation for 240 hours in the month.

Additional details of the monthly criteria pollutant emissions (that will include recommissioning operation) are provided in Appendix A-20.

3.3.8 Annual Criteria Pollutant Emissions (MPP Upgraded Facility) 1st Year of Operation

Table 3-25 presents the estimated annual criteria pollutant emissions for the upgraded MPP facility during the 1st year of operation that will include recommissioning operation. Annual emissions for CO, NOx and VOC are based on 252 hours of recommissioning operation, 60 startups, 60 shutdowns, 1,000 hours of normal operation with duct burner, and 6,886 hours of normal operation without the duct burner.

Annual emissions for PM10 and SOx are based on 252 hours of recommissioning operation, 1,000 hours of normal operation with duct burner, and 7,256 hours of normal operation without the duct burner. PM10 and SOx emissions are based on 1,000 hours of normal operation with duct burner and the remaining operation (7,256 hours) without the duct burner.

Additional details of the annual criteria pollutant emissions are provided in Appendix A-21B).

3.3.9 Annual Criteria Pollutant Emissions (MPP Upgraded Facility) 1st Year of Operation with Capacity Factor of 84.9 percent

BWP is proposing to operate the upgraded MPP with a capacity factor of 84.9 (Reference 14). The capacity factor calculation was performed following the South Coast AQMD Rule 1135(c)(1) (Reference 15).

Table 3-25 also presents the estimated annual criteria pollutant emissions for the upgraded MPP facility during the 1st year of operation with a capacity factor of 84.9%. Note that the capacity factor was not used for calculating emissions during the recommissioning operation.

3.3.10 Annual NOx Emissions During the Second Year of Operation of the Upgraded MPP

Annual NOx emissions for the upgraded MPP facility during the 2nd year of operation was estimated at 163,020 lbs. These emissions are based on 60 startups, 60 shutdowns, 1,000 hours of normal operation with duct burner, and 7,118 hours of normal operation without the duct burner.

3.3.11 Annual NOx Emissions During the Second Year of Operation of the Upgraded MPP with Capacity Factor of 84.9 percent

Annual NOx emissions for the upgraded MPP facility during the 2nd year of operation with a capacity factor of 84.9% was estimated at 138,404 lbs (163,020 x 0.849).

3.4 Hazardous Air Pollutants Emissions

The gas turbine and the duct burner at the MPP are the sources of hazardous air pollutants (HAPs). The details of the HAPs emissions are provided below for the gas turbine and the duct burner.

3.4.1 Annual HAPs Emissions From Upgraded MPP

Table 3-26 presents the annual HAPs emissions for the operation of the upgraded MPP facility. These HAPs emissions are based on the normal operation of the upgraded MPP facility throughout the year i.e. 8,508 hours of operation. This includes the operation of the duct burner for 1,000 hours during the year.

Note that HAPs emissions during the year when MPP upgrades will be made will be less than the emissions presented in Table 3-26 because fuel use will be lower during the recommissioning year of operation.

3.5 Greenhouse Gas Emissions

The gas turbine and the duct burner are the source of greenhouse gas (GHG) emissions at the MPP.

Total GHG mass emission (Potential-to-Emit; 8,508 hours of operation during the year) for the operation of the upgraded MPP facility during the second year of operation was estimated at 1,000,095 tons. In addition, total CO_2e emission (Potential-to-Emit) for the operation of the upgraded MPP facility was estimated at 1,001,104 tons. The details of the GHG emissions are provided in Appendix A-26.

The GHG emissions are based on the operation of the upgraded MPP facility for 8,508 hours in the year.

Note that GHG emissions during the year when MPP upgrades will be made will be less than the emissions during the year when upgraded MPP facility will be operated without recommissioning because fuel use will be lower during the recommissioning year of operation.

Table 3-1
Summary of the Operating Scenario for the Existing MPP[a]

Parameter	Value
a. MPP facility permitted hours in a year	8,322
b. Permitted number of startups in a month	5
c. Number of hours in one startup	6
d. Permitted number of startup hours in a year	360
e. Permitted number of shutdowns in a month	5
f. Number of hours in one shutdown	0.5
g. Permitted number of shutdown hours in a year	30
h. Permitted number of duct burner operation in a day	12
i. Permitted number of duct burner operation in a month	240
j. Permitted number of duct burner operation in a year	1,000
k. Number of hours of MPP regular operation without startup, shutdown or duct burner operation	6,932
[a] see Appendix A-1 for details.	

Table 3-2 Recommissioning Schedule for the MPP Upgrade Project

Day of task	Task	Mode Units	CT Load MW	Runtime hours
1	Cold start, steam temp match, M1P mapping	Tot_M1P	10	5
1	M3P Checkout	M3P	25	0.5
1	M62P Checkout	M62P	35	0.5
1	M63P & M5P part load mapping	C_P	50	2
1	M63PA part load mapping	C_PA	90	2
1	Overnight parking point	CP_Overnight	50	14
2	M63PA part/base/peak load mapping	C_PA	90	9
2	Overnight parking point	CP_Overnight	50	15
3	M63PA part/base/peak load mapping	C_PA	90	9
3	Overnight parking point	CP_Overnight	50	15
4	M63P & M5P part load mapping	C_P	50	9
4	Shutdown for fuel strainer removal	SD	0	15
5	Warm start, steam temp match, M1P mapping	Tot_M1P	10	3
5	M3P mapping	M3P	25	2
5	M62P mapping	M62P	35	2
5	M63P & M5P part load mapping	C_P	50	2
5	M63PA base/peak load performance testing	C_PA_tune	90	6
5	Overnight parking point	CP_Overnight	50	9
6	M63P & M5P part load mapping	C_P	50	7
6	M63PA part/base/peak load mapping	C_PA	90	2
6	M63PA base/peak load performance testing	C_PA_tune	90	2
6	Overnight parking point	CP_Overnight	50	13
7	M63PA autotune validation and AT loop stability testing	C_PA	90	5
7	M63P & M5P autotune validation and AT loop stability testing	C_P	50	5
7	Overnight parking point	CP_Overnight	50	14
8	M63P/M5P MECL performance testing	C_PA_tune	50	12
8	Shutdown for final software download & water wash	SD	0	12
9	Offline water wash	WW	0	24
10	Cold start, steam temp match, final schedule	Tot_M1P	10	2.7

Table 3-2 Recommissioning Schedule for the MPP Upgrade Project

Day of task	Task	Mode Units	CT Load MW	Runtime hours
10	Load to base	M3P	25	0.1
10	Load to base	M62P	35	0.1
10	Load to base	C_P	50	0.1
10	Contractual Performance Testing	C_PA_tune	90	12
10	Overnight parking point	CP_Overnight	50	9
11	Contractual Performance Testing	0	202	12

Table 3-3
Summary of the Operating Scenarios for Upgraded MPP[a]
1st Year of Operation

Parameter	Value
a. MPP facility permitted hours in a year	8,508
b. Permitted number of startups in a month	5
c. Number of hours in one startup	6
d. Permitted number of startup hours in a year	360
e. Permitted number of shutdowns in a month	5
f. Number of hours in one shutdown	0.5
g. Permitted number of shutdowns in a year	30
h. Permitted number of duct burner operation in a day	12
j. Permitted number of duct burner operation in a month	240
k. Permitted number of duct burner operation in a year	1,000
l. Total number of hours in recommissioning in a year	252
m. Number of hours of MPP regular operation without recommissioning, startup, shutdown or duct burner operation	6,866
[a] see Appendix A-1 for details.	

Table 3-4
Summary of the Operating Scenarios for Upgraded MPP[a]
2nd Year of Operation

Parameter	Value
a. MPP facility permitted hours in a year	8,508
b. Permitted number of startups in a month	5
c. Number of hours in one startup	6
d. Permitted number of startup hours in a year	360
e. Permitted number of shutdowns in a month	5
f. Number of hours in one shutdown	0.5
g. Permitted number of shutdowns in a year	30
h. Permitted number of duct burner operation in a day	12
j. Permitted number of duct burner operation in a month	240
k. Permitted number of duct burner operation in a year	1,000
l. Number of hours of MPP regular operation without startup, shutdown or duct burner operation	7,118
[a] see Appendix A-1 for details.	

Table 3-5
Normal MPP (Currently Permitted) Operation Emissions (100% Load) Ref. 2
(Without the Duct Burner)

Pollutant	Hourly Emissions (lb/hr)
NO_x	13.18
CO	8.02
VOC	4.58
PM_{10}	11.79
SO_x	1.28
Ammonia (NH_3)	12.17

Table 3-6
Emissions from the Currently Permitted Duct Burner Ref. 2

Pollutant	Hourly Emissions (lb/hr)
NO_x	4.30
CO	2.62
VOC	1.50
PM_{10}	4.43
SO_x	0.42
Ammonia (NH_3)	3.97

Table 3-7
Normal MPP (Currently Permitted) Operation Emissions (100% Load) Ref. 2
(With the Duct Burner)

Pollutant	Hourly Emissions (lb/hr)
NO_x	17.48
CO	10.64
VOC	6.08
PM_{10}	16.22
SO_x	1.7
Ammonia (NH_3)	16.15

Table 3-8
Emissions during Startup
(Currently Permitted) of the MPP Ref. 2
(Startup Duration Six Hours)

Pollutant	Startup Emissions (lb)
NO_x	440.00
CO	500.00
VOC	30.00
PM_{10}	70.74
SO_x	7.68

Table 3-9
Emissions during Shutdown
(Currently Permitted) of the MPP
[Shutdown Duration 0.5 hour (30 Minutes)]

Pollutant	Shutdown Emissions Ref. 2 (lb in 30 minutes)	Shutdown Emissions (lb in 60 minutes)[a]
NO_x	25.00	33.74
CO	120.00	125.32
VOC	17.00	20.04
PM_{10}	5.90	14.01
SO_x	0.64	1.49

[a] This includes 30 minutes of shutdown emission and 30 minutes of normal operation with duct burner emission

Table 3-10
Summary of Emissions During Startup, Shutdown, and Normal Operations (MPP Facility with Current Permit Conditions)

Operating Scenario	Length Of Event (minutes)	NO_x (lbs/event)	CO (lbs/event)	VOC (lbs/event)	PM_{10} (lbs/event)	SO_x (lbs/event)
Startup	360	440.00	500.00	30.00	70.74	7.68
Shutdown	30	25.00	120.00	17.00	5.90	0.64
Shutdown + Normal Operation with Duct Burner	60	33.74	125.32	20.04	14.01	1.49
Normal (100% load) without Duct Burner	60	13.18	8.02	4.58	11.79	1.28
Normal (Only Duct Burner)	60	4.30	2.62	1.50	4.43	0.42
Normal (100% load) with Duct Burner	60	17.48	10.64	6.08	16.22	1.70

Table 3-11
Summary of Daily, Monthly, and Annual Criteria Pollutant Emissions (MPP Facility with Current Permit Conditions)

Operating Scenario	Length Of Event (Hours)	NO_x (lbs/event)	CO (lbs/event)	VOC (lbs/event)	PM_{10} (lbs/event)	SO_x (lbs/event)
Daily [Ref. 2]	24	747.3	791.8	145.2	336.1	35.8
Monthly [Ref. 3]	720	-	9,243	3,744	9,552	1,022
Annual [Ref. 2]	8,322	136,744	103,435	40,649	102,546	11,072

Table 3-12
Criteria Pollutant Emissions during the full Recommissioning Operation[a]

Task	NOx, lb	CO, lb	VOC, lb	PM10, lb	SOx, lb
All the Tasks from Day 1 to Day 11	3,146	8,863	1,236	975	162

[a] see Appendix 8 for details.

Table 3-13
Highest Daily Emission of Criteria Pollutants during Recommissioning Operation[a]

Day of Task	NOx lb/day	CO lb/day	VOC lb/day	PM10 lb/day	SOx lb/day
5	857	4,166	589	-	-
11 (12 hrs in recommissioning and 12 hrs in normal operation)	-	-	-	231	32

[a] see Appendix 9 for details.

Table 3-14
Summary of Recommissioning Emissions and Stack Exhaust Parameters

Day of task	CT Load	Runtime	Fuel Used	Stack Emissions per Task NOx	CO	VOC	PM10	SOx	Stack Exhaust Temp	Stack Exhaust Flow Rate
	MW	hours	MMBtu, HHV	lb	lb	lb	lb	lb	°F	acfm
1A	10	5.00	3,004	520	1,966	315	18	1.72	170	514,587
1B+1C	**60**	**1.0**	**969**	**95**	736	99	4	0.55	182	548,585
1D	50	2.00	2,566	18	39	0	9.0	1.47	218	695,692
1E	90	2.00	3,692	27	5	1	12.0	2.11	202	942,433
1F	50	14.00	17,964	95	32	3	62.0	10.27	218	695,692
2A	90	9.00	16,612	121	24	3	56.0	9.49	202	942,433
2B	50	15.00	19,247	102	35	3	67.0	11.00	218	695,692
3A	90	9.00	16,612	121	24	3	56.0	9.49	202	942,433
3B	50	15.00	19,247	102	35	3	67.0	11.00	218	695,692
4A	50	9.00	11,548	82	173	2	40.0	6.60	218	679,267
4B	0	15.00	0	0	0	0	0.0	0.00	130	0
5A	10	3.00	1,803	312	1,180	189	11.0	1.03	185	526,845
5B	25	2.00	1,760	254	932	107	7.0	1.01	191	533,721
5C	35	2.00	2,114	122	2,014	288	8.0	1.21	202	589,397
5D	50	2.00	2,566	27	5	1	9.0	1.47	218	695,692
5E	90	6.00	11,075	81	14	2	37.0	6.33	202	942,433
5F	50	9.00	11,548	61	21	2	40.0	6.60	218	695,692
6A	50	7.00	8,982	64	135	2	31.0	5.13	218	695,692
6B	90	2.00	3,692	27	5	1	12.0	2.11	202	942,433
6C	90	2.00	3,692	27	5	1	12.0	2.11	202	942,433
6D	50	13.00	16,681	88	30	3	58.0	9.53	218	695,692
7A	90	5.00	9,229	67	13	2	31.0	5.27	202	942,433

Table 3-14
Summary of Recommissioning Emissions and Stack Exhaust Parameters

				Stack Emissions per Task						
Day of task	CT Load MW	Runtime hours	Fuel Used MMBtu, HHV	NOx lb	CO lb	VOC lb	PM10 lb	SOx lb	Stack Exhaust Temp °F	Stack Exhaust Flow Rate acfm
7B	50	5.00	6,416	45	96	1	22.0	3.67	218	695,692
7C	50	14.00	17,964	95	32	3	62.0	10.27	218	695,692
8A	50	12.00	15,397	82	28	3	54.0	8.80	218	695,692
8B	0	12.00	0	0	0	0	0.0	0.00	170	0
9	0	24.00	0	0	0	0	0.0	0	120	0
10A										
10A1	**10**	**2.0**	**1202**	**208**	787	126	7	0.69	170	514,587
10A2+BCD	**10**	**1.0**	**743**	**94**	427	63	3	0.42	191	579535
10E	90	12.00	22,150	108	13	4	74.0	12.66	202	942,433
10F	50	9.00	11,548	61	21	2	40.0	6.60	218	695,692
11		12.00	24,188	40	36	4	66.0	13.82	198	1,116,822

[a] see Appendix A-10 for details.

Table 3-15
Summary of Hourly Recommissioning Emissions
(see Table 3-14 for Additional Details)

Day of task	Runtime	Hourly Stack Emissions				
		NOx	CO	VOC	PM10	SOx
	hours	lb	lb	lb	lb	lb
1A	5.00	104.00	393.20	63.00	3.60	0.34
1B+1C	**1.0**	95.00	736.00	99.00	4.00	0.55
1D	2.00	9.00	19.50	0.00	4.50	0.74
1E	2.00	13.50	2.50	0.50	6.00	1.06
1F	14.00	6.79	2.29	0.21	4.43	0.73
2A	9.00	13.44	2.67	0.33	6.22	1.05
2B	15.00	6.80	2.33	0.20	4.47	0.73
3A	9.00	13.44	2.67	0.33	6.22	1.05
3B	15.00	6.80	2.33	0.20	4.47	0.73
4A	9.00	9.11	19.22	0.22	4.44	0.73
4B	15.00	0.00	0.00	0.00	0.00	0.00
5A	3.00	104.00	393.33	63.00	3.67	0.34
5B	2.00	127.00	466.00	53.50	3.50	0.51
5C	2.00	61.00	1007.00	144.00	4.00	0.61
5D	2.00	13.50	2.50	0.50	4.50	0.74
5E	6.00	13.50	2.33	0.33	6.17	1.06
5F	9.00	6.78	2.33	0.22	4.44	0.73
6A	7.00	9.14	19.29	0.29	4.43	0.73
6B	2.00	13.50	2.50	0.50	6.00	1.06
6C	2.00	13.50	2.50	0.50	6.00	1.06
6D	13.00	6.77	2.31	0.23	4.46	0.73
7A	5.00	13.40	2.60	0.40	6.20	1.05
7B	5.00	9.00	19.20	0.20	4.40	0.73
7C	14.00	6.79	2.29	0.21	4.43	0.73
8A	12.00	6.83	2.33	0.25	4.50	0.73
8B	12.00	0.00	0.00	0.00	0.00	0.00
9	24.00	0.00	0.00	0.00	0.00	0.00
10A1	**2.0**	104.00	393.50	63.00	3.50	0.35
10A2+BCD	**1.0**	94.00	427.00	63.00	3.00	0.42
10E	12.00	9.00	1.08	0.33	6.17	1.06
10F	9.00	6.78	2.33	0.22	4.44	0.73
11	12.00	3.33	3.00	0.33	5.50	1.15

Table 3-16
Normal MPP Operation Emissions (100% Load)
After Recommissioning Without the Duct Burner
(See Appendix A-14B for additional information)

Pollutant	Hourly Emissions (lb/hr)
NO_x	15.51
CO	9.44
VOC	5.39
PM_{10}	10.41
SO_x	1.20
Ammonia (NH_3)	14.33

Table 3-17
Normal MPP Operation Emissions (100% Load)
from the Duct Burner After Recommissioning
(See Appendix A-15B for additional information)

Pollutant	Hourly Emissions (lb/hr)
NO_x	4.30
CO	2.62
VOC	1.50
PM_{10}	3.32
SO_x	0.33
Ammonia (NH_3)	3.97

Table 3-18
Normal MPP Operation Emissions (100% Load)
After Recommissioning (With the Duct Burner)
(See Appendix A-16B for additional information)

Pollutant	Hourly Emissions (lb/hr)
NO_x	19.80
CO	12.05
VOC	6.89
PM_{10}	13.73
SO_x	1.53
Ammonia (NH_3)	18.30

Table 3-19
Emissions during Startup of the MPP
After Recommissioning
(Startup Duration Six Hours)
(See Appendix A-11 for additional information)

Pollutant	Startup Emissions (lb)
NO_x	518.00
CO	588.00
VOC	35.00
PM_{10}	83.25
SO_x	9.04

Table 3-20
Emissions during Shutdown of the MPP After Recommissioning
[Shutdown Duration 0.5 hour (30 Minutes)]
(See Appendix A-12 for additional information)

Pollutant	Shutdown Emissions (lb in 30 minutes)	Shutdown Emissions (lb in 60 minutes)[a]
NO_x	29.00	38.90
CO	141.00	147.03
VOC	20.00	23.45
PM_{10}	6.94	13.81
SO_x	0.75	1.52

[a] This includes 30 minutes of shutdown emission and 30 minutes of normal operation with duct burner emission

Table 3-21
Summary of Emissions During Startup, Shutdown, and Normal Operations (Upgraded MPP Facility)

Operating Scenario	Length Of Event (minutes)	NO_x (lbs/event)	CO (lbs/event)	VOC (lbs/event)	PM_{10} (lbs/event)	SO_x (lbs/event)
Startup	360	518.00	588.00	35.00	83.25	9.04
Shutdown	30	29.00	141.00	20.00	6.94	0.75
Shutdown + Normal Operation with Duct Burner	60	38.90	147.03	23.45	13.81	1.52
Normal (100% load) without Duct Burner	60	15.51	9.44	5.39	10.41	1.20
Normal (Only Duct Burner)	60	4.30	2.62	1.50	3.32	0.33
Normal (100% load) with Duct Burner	60	19.80	12.05	6.89	13.73	1.53

Table 3-22
Daily Emissions During 1st Year of Operation after Recommissioning[a]

Operation Description	NO_x (lbs/event)	CO (lbs/event)	VOC (lbs/event)	PM10 (lbs/event)	SOx (lbs/event)
Daily operation of the upgraded MPP facility.	869.9	925.5	167.3	289.7	32.8
[a] See Appendix A-18 for details.					

Table 3-23
Monthly Emissions During 1st Year of Operation with Recommissioning[a]

Operation Description	CO (lbs/event)	VOC (lbs/event)	PM10 (lbs/event)	SOx (lbs/event)
Monthly operation of the upgraded MPP facility with Recommissioning.	17,245.5	4,218.3	8,292.0	943.2
[a] See Appendix A-19 for details.				

Table 3-24
Monthly Emissions During 1st Year of Operation without Recommissioning[a]

Operation Description	**CO (lbs/event)**	VOC (lbs/event)	PM10 (lbs/event)	**SOx (lbs/event)**
Monthly operation of the upgraded MPP facility with Recommissioning.	10,761.4	4,340.6	8,292.0	943.2
[a] See Appendix A-20 for details.				

Table 3-25
Annual Emissions During the First Year of Operation, Upgraded MPP Facility with Recommissioning

Operation Description	**NO_x (lbs/event)**	**CO (lbs/event)**	**VOC (lbs/event)**	**PM10 (lbs/event)**	**SOx (lbs/event)**
Annual operation of the upgraded MPP facility (with Recommissioning)[a].	162,258	129,468	48,434	90,240	10,399
Annual operation of the upgraded MPP facility (with Recommissioning) and capacity factor of 84.9%[b].	138,232	111,257	41,307	76,761	8,853
[a] See Appendix A-21B b See Appendix A-29					

Table 3-26
HAP's Emissions from the Operation of the Upgraded MPP Facility[a]
(Second Year of Operation)

Pollutant (HAP)	Annual Emission, lbs/yr	Annual Emission, tons/yr
1,3-Butadiene	7.95E+00	3.98E-03
Acetaldehyde	7.39E+02	3.70E-01
Acrolein	6.69E+01	3.34E-02
Benzene	6.02E+01	3.01E-02
Ethylbenzene	5.91E+02	2.96E-01
Formaldehyde	6.65E+03	3.33E+00
Propylene Oxide	5.37E+02	2.68E-01
Toluene	2.41E+03	1.21E+00
Xylenes	1.18E+03	5.91E-01
Acenaphthene	3.34E-01	1.67E-04
Acenaphthylene	2.59E-01	1.29E-04
Anthracene	5.95E-01	2.97E-04
Benzo(a)anthracene	3.98E-01	1.99E-04
Benzo(a)pyrene	2.45E-01	1.22E-04
Benzo(b)fluoranthene	1.99E-01	9.94E-05
Benzo(e)pyrene	9.57E-03	4.79E-06
Benzo(g,h,i)perylene	2.41E-01	1.21E-04
Benzo(k)fluoranthene	1.94E-01	9.68E-05
Chrysene	4.43E-01	2.22E-04
Indeno(1,2,3-cd)pyrene	4.14E-01	2.07E-04
Naphthalene	2.92E+01	1.46E-02
Diebenz(a,h)anthracene	4.14E-01	2.07E-04
Fluoranthene	7.60E-01	3.80E-04
Fluorene	1.02E+00	5.10E-04
Phenanthrene	5.51E+00	2.75E-03
Pyrene	4.87E-01	2.44E-04
	Total (tons/year)	**6.14E+00**
[a]See Appendix A-23 for additional information.		

SECTION 4
REGULATORY COMPLIANCE EVALUATION

The operation of the Upgraded MPP which includes one combustion turbine/gas turbine, one duct burner, and one steam turbine generator, is subject to several South Coast AQMD, state of California, and federal rules and regulations. A compliance evaluation of the upgraded MPP with these rules and regulations is presented below.

4.1 South Coast AQMD Regulations

4.1.1 Rule 212 – Standards for Approving Permits

Rule 212(c) requires the issuance of a public notice prior to granting a permit if any of the following apply:

- Any new or modified permit unit, source under Regulation XX, or equipment under Regulation XXX that may emit air contaminants located within 1000 feet of a school. No notice is required if the modification of an existing facility results in an emission reduction and there is no increase in health risk.
- Any new or modified facility, which has on-site emission increase exceeding 30 lbs/day, of VOC; 40 lbs/day of NOx; 30 lbs/day of PM10; 60 lbs/day of SOx; 220 lbs/day of CO; or 3 lbs/day of lead.
- Any new or modified permit unit, source under Regulation XX, or equipment under Regulation XXX that increases emissions of toxic air contaminants and when the maximum individual cancer risk is equal to or greater than one in one million unless the total facility wide cancer risk is below ten in one million. For a single permitted unit the public notice is required if the maximum individual cancer risk is 10 in one million.

MPP is subject to Regulations XX and XXX, and there will be an increase in emissions on a daily basis from the facility modification. Emission changes for CO, PM10, SOx and VOC from the facility modification are provided in Table 4-1. Therefore, the project is subject to public notice under Rule 212. Note that there is no school within 1000 feet of the facility. Following are the notice requirements for the rule:

The MPP Upgrade project is subject to the noticing requirements of South Coast AQMD Rule 212 paragraph (g). This paragraph requires that notification follow the procedures of 40 CFR51, and 40 CFR124, Section 124.10. Rule 212(g) also requires: (1) the South Coast AQMD analysis and information submitted by the facility operator must be available for public inspection in an area near the source, (2) notice by prominent advertisement in the affected area, and (3) mailing a copy of the notice to the USEPA, California Air Resources Board (CARB), chief executives of the city and county where the source is located, any land use agencies, State and Federal Land Managers of Indian Governing Body whose lands may be affected by the project.

In addition to the above, Section 124.10 requires that the notice be sent to Federal and State agencies with jurisdiction over fish, shellfish, and wildlife resources and over coastal zone management plans, the Advisory Council on Historic Preservation, State and Historic Preservation Officers. The applicant must also distribute the notification to all addresses within a ¼ mile radius of the facility.

4.1.2 Rule 218, 218.1, 218.2, 218.3 – Continuous Emission Monitoring (CEMS)

A CO CEMS was required to be installed to verify that the emissions of CO from MPP did not exceed the emission limits. The CO CEMS has been installed and certified.

Rule 218.1 details the specifications for the new or modified CEMS which are subject to various sections of Rule 218. Rule 218.2 details the requirements for CEMS. It also refers to Rule 218.3 for certifications and quality assurance requirements.

The CO CEMS has been installed and certified; therefore, continued compliance with Rule 218 is expected.

4.1.3 Rule 401 – Visible Emissions

Because the combustion turbine and duct burner fire natural gas, visible emissions are not expected under normal operation. There is no indication of visible emission problems at the MPP. Therefore, continued compliance with Rule 401 is expected.

4.1.4 Rule 402 – Nuisance

Nuisance problems are not expected under normal operating conditions of the MPP. There have been no issues of odor or other nuisance problems at the MPP. Therefore, continued compliance with Rule 402 is expected.

4.1.5 Rule 407 – Liquid and Gaseous Air Contaminants

This rule limits the CO emissions to 2,000 ppm maximum and the SO_2 emissions to 500 ppm for equipment not subject to the emission concentration limits of Rule 431.1. Because the combustion turbine is subject to Rule 431.1, the only limit that applies is the 2,000-ppm CO limit.

Compliance with the CO limit has been demonstrated through stack source testing. The combustion turbine is also subject to a more stringent CO BACT limit of 2 ppm. The initial source test confirmed that MPP can comply with the 2 ppm emission limit. In addition, MPP is required to maintain a CO continuous emission monitoring system. Therefore, continued compliance with Rule 407 is expected.

4.1.6 Rule 409 Combustion Contaminants

The rule limits particulate matter (PM) emissions (from combustion) to 0.1 grains/scf at 12 percent CO_2, averaging over 15 minutes. The recent source test results summarized below show that the actual particulate emissions are below this limit (see Reference 2 in Appendix A-27).

	Test Load	Results, gr/scf at 12% CO_2
Initial Testing October 2005	Without Duct Firing	0.001
	With Duct Firing	0.001
Periodic Testing November 2008	Without Duct Firing	0.00079
	With Duct Firing	0.00074
Periodic Testing August 2011	Without Duct Firing	0.00007
	With Duct Firing	0.00078
Periodic Testing September 2014	Without Duct Firing	0.0006
	With Duct Firing	0.0004
Periodic Testing June 2017	Without Duct Firing	0.0004
Periodic Testing September 2017	With Duct Firing	0.0003

The theoretical calculations performed for the upgraded MPP also support the conclusion that the upgraded MPP is expected to be in compliance with Rule 409 at maximum firing load based on the calculations shown below:

Grain Loading in grain/scf = [(A x B)/(C x D)] x 7,000

where:

A = PM_{10} emission rate during normal operation from the MPP stack exhaust (see Appendix A-16B)= 13.73 lb/hr

B = Rule specified percent of CO_2 in the exhaust (12 percent)

C = Percent of CO_2 in the stack exhaust = (see Reference 2 in Appendix 27) = 4.29 percent

D = Stack exhaust flow rate, scf/hr (see Appendix A-16B) = 82.87 MMscf/hr

Calculations for MPP

Grain Loading = [(13.73 lbs/hr x 12)/(4.29 x 82,870,000 scf/hr)] x 7000 gr/lb
= 0.0032 grain/scf

Thus, the operation of the upgraded MPP will be in compliance with Rule 409. Compliance will be verified through the initial performance test.

4.1.7 Rule 429.2 Startup and Shutdown Exemption Provisions for Oxides of Nitrogen from Electricity Generating Facilities

Rule 429.2 provides an exemption from Rule 1135 – Emissions of Oxides of Nitrogen from Electricity Generating Facilities (Rule 1135) emission limits during periods when units regulated under Rule 1135 are starting up and shutting down, and establishes requirements during startup and shutdown.

According to Rule 429.2, the Startup and Shutdown Duration Limits for Electric Generating Units Installed Prior to January 7, 2022 or the times specified in the Permit to Construct or Permit to Operate, whichever is more stringent. Because MPP was installed prior to January 7, 2022, MPP will continue to comply with the Startup and Shutdown duration limits specified in the Permit to Operate issued by the South Coast AQMD.

4.1.8 Rule 431.1 – Sulfur Content of Natural Gas

The natural gas supplied to the MPP is expected to comply with the 16 ppmv sulfur limit (calculated as H_2S) specified in Rule 431.1(c) (1). Commercial grade natural gas has an average sulfur content of about 4 ppm. MPP will also comply with reporting and record keeping requirements as outlined in subdivision (e) of this rule. Therefore, continued compliance with Rule 431.1 is expected.

4.1.8 Rule 475 – Electric Power Generating Equipment

This rule applies to power generating equipment greater than 10 MW and installed after May 7, 1976 and requires that the equipment meet a limit for combustion contaminants of 11 lb/hr or 0.01 gr/scf. Compliance is achieved if either the mass limit or the concentration limit is met. Mass PM10 emissions from the MPP is estimated at 13.73 lb/hr, and 0.0035 gr/scf during natural gas firing at maximum load (see calculations below). Therefore, compliance is expected and has been verified through the initial and subsequent performance testing.

The following equation is used to determine stack exhaust flow and combustion particulates. The results are presented below.

Stack Exhaust Flow (scf/hr) = F_d x [20.9 / (20.9 - %O_2)] x TFD

where:

F_d: Dry F factor for fuel type, 8710 dscf/MMBtu

O_2: Rule specific dry oxygen content in the effluent stream, 3 percent

TFD: Total fired duty measured at the higher heating value (HHV), 2,686 MMBtu/hr

Combustion Particulates (grain/scf) = (PM10, lb/hr / Stack Exhaust Flow, scf/hr) x 7,000 (gr/lb)

Stack Exhaust Flow = 8710 x (20.9/17.9) x 2686 = 27.32E+06 scf/hr

Combustion Particulate = (13.73/27.32E+06) x 7000 = 0.0035 grain/scf

4.1.9 Regulation IX – Standards of Performance for New Stationary Sources (NSPS)

These requirements are discussed under federal regulations in Section 4.3.

4.1.10 Regulation X – National Emission Standards for Hazardous Air Pollutants (NESHAPS)

These requirements are discussed under federal regulations in Section 4.3.

4.1.11 Regulation XI – Source Specific Standards - Rule 1135 - Emissions of Oxides of Nitrogen from Electricity Generating Facilities

This rule applies to electric generating units at electric generating facilities. The combustion turbine at the MPP generates electric power and is subject to this rule. A summary of Rule 1135 is provided below.

1. The owner or operator of an electric generating facility shall not operate a combined cycle gas turbine and associated duct burner in a manner that exceeds the NOx emission limit in Table 1 of Rule 1135. NOx emission limit during normal operation specified in Table 1 for combined cycle gas turbine and associated duct burner is 2 ppmv.
2. Gas turbines installed or for which the owner or operator applied for Permits to Construct prior to November 2, 2018 shall: (i) average the NOx emission limits in Table 1 over a 60-minute rolling average: or (ii) retain the average time requirements specified in the Permit to Operate as of November 2, 2018.
3. The South Coast AQMD regulations require the application of current BACT whenever a major modification is made at the existing stationary source.

For NOx emissions, the change in the maximum hourly as well as the maximum daily increase in emissions for the MPP Upgrade were estimated. The maximum daily NOx emissions for the existing facility and for the modified facility are presented in Table 4-1. The data presented in Table 4-1 demonstrate that there will be an increase in maximum daily NOx emissions after modification is made to the MPP. This increase will be greater than 1 lb/day.

In addition to the above analysis for the change in maximum daily emissions, an analysis for the change in the maximum hourly emissions was also performed. In Table 3-10 the maximum hourly NOx emissions for the existing MPP (100% load with duct burner) is reported as 17.48 lb/hr. In Table 3-18 the maximum hourly NOx emissions for the Upgraded MPP (100% load with duct burner) is reported as 19.80 lb/hr. Therefore, there will be an increase in maximum hourly NOx emissions after modification is made to the MPP, there will also be an increase in maximum hourly emissions after modification is made to the MPP.

Since there will be an increase in maximum hourly as will as maximum daily NOx emissions after the MPP upgrade, BWP/SCPPA is proposing to average the NOx emission limit of 2 ppmv over 1-hour (1-hr block average) to demonstrate compliance with Rule 1135.

4.1.12 Regulation XIII – New Source Review

The MPP is subject to best available control technology (BACT), modeling, and offsets requirements of New Source Review. A discussion is presented below on the applicability and compliance with these requirements.

Rule 1303(a) – Best Available Control Technology

The MPP gas turbine was constructed in 2002 with the following BACT levels for the criteria pollutants in compliance with the South Coast AQMD's BACT requirements:

CO:	2 ppmvd at 15% O_2
VOC:	2 ppmvd at 15% O_2
PM10:	An emission limit corresponding to natural gas with fuel sulfur content of no more than 1 grain/100 scf
SOx:	An emission limit corresponding to natural gas with fuel sulfur content of no more than 1 grain/100 scf

The South Coast AQMD BACT levels for the above criteria pollutants have not been changed; therefore, the existing MPP is in compliance with the current South Coast AQMD requirements for all the above criteria pollutants. In addition, the BWP/SCPPA is proposing to average the NOx emission limit of 2 ppmv over 1-hr block average. Therefore, upgraded MPP will continue to be in compliance with the South Coast AQMD BACT requirements and new BACT analysis for the upgraded MPP will not be required.

Rule 1303(b)(1) – Modeling

Rule 1303(b)(1) requires air dispersion modeling for CO and PM10 emissions. MPP is located in the South Coast Air Basin (SCAB), which is currently designated as attainment with PM10 NAAQS. However, it is designated as non-attainment for the California Ambient Air Quality Standards (CAAQS) for PM10.

The SCAB is designated as attainment with CO NAAQS and CAAQS. It is also designated as attainment with SO_2 NAAQS and CAAQS. Note that BWP decided to perform air dispersion modeling analysis also for oxides of sulfur (SOx) emissions for the MPP Upgrade project.

Rule 1303 requires that for a project located in a non-attainment area, it should be demonstrated through modeling that the project will not cause exceedances of the significant change threshold concentrations specified in Rule 1303 (Table A-2, Appendix A). Thus, for demonstrating compliance for PM10 with CAAQS, the significance threshold would be the significant change threshold concentrations specified in Rule 1303 (Table A-2, Appendix A).

For a project located in an attainment area, Rule 1303 requires that it should be demonstrated through modeling that the project concentrations plus the measured background concentration would not create a violation of the ambient air quality standard. Thus, for CO and PM10 (for demonstrating compliance with the NAAQS) and SOx the significance threshold would be the CO, PM10 and SOx ambient air quality standards.

Atmospheric dispersion modeling was conducted to analyze potential localized ambient air quality impacts associated with the operation of the MPP. The atmospheric dispersion modeling methodology used for the MPP is based on generally accepted modeling practices and modeling guidelines of both the USEPA and the Soth Coast AQMD. All dispersion modeling was performed using the AERMOD dispersion model (Version 23132) following the modeling protocol approved by the South Coast AQMD for the MPP Upgrade 2024 project. A copy of the modeling protocol is provided in Appendix C.

Additional details of the air dispersion modeling studies performed for the MPP Upgrade project to demonstrate compliance with Rule 1303 are presented below.

Significance Criteria

According to Rule 1303, the South Coast AQMD will not approve an application for a facility permit authorizing construction or installation of a new or modified source unless the applicant demonstrates that the operation of the new or modified source will not cause a change in PM10 concentration levels as specified in Table 4-2. In addition, the South Coast AQMD will not approve an application for a facility permit authorizing construction or installation of a new or modified source unless the applicant demonstrates that the operation of the new source(s) will not cause a violation of the CO and PM10 ambient air quality standards (AAQS) as specified in Table 4-2. This table also provides the ambient air quality standards for SOx. The predicted modeled concentrations were added to the highest monitored background concentration levels in the area from the last three years and compared to the AAQS. The historical ambient air quality data for PM10 (24-hour average) is provided in Table 4-3 for the last three years: 2021, 2022, and 2023 [data from the Central LA (Los Angeles-north Main Street; 060371103)].

The historical ambient air quality data for CO (1-hr and 8-hour average) is provided in Table 4-4 for the last three years: 2021, 2022, and 2023 [data from the Central LA (Los Angeles-north Main Street; 060371103)].

The historical ambient air quality data for SOx (1-hour maximum and 1-hr 99th percentile) is provided in Table 4-5 for the last three years: 2021, 2022, and 2023 [data from the Central LA (Los Angeles-north Main Street; 060371103)].

Emission Estimation of Carbon Monoxide, Particulate Matter and Sulfur Dioxide

The details of the emission calculations for all operating scenarios are provided in Section 3. The modeling analysis for CO emissions during the recommissioning, startup, normal operation as well as during shutdown operations were performed. However, PM10 and SOx modeling analysis for the recommissioning scenario was not performed because emissions of these criteria pollutants are expected to occur during the normal operation.

Model Selection

As mentioned above, the dispersion modeling methodology followed both USEPA and South Coast AQMD guidelines. The AERMOD model is a USEPA model used for simulating the transport and dispersion of emission sources in areas of flat as well as elevated terrains.

Modeling Options

USEPA regulatory default modeling options were selected for performing the dispersion modeling analysis. The AERMOD model was used in Urban Mode.

Meteorological Data

Five years (2018 through 2022) of meteorological data for the Burbank Arpt. Station (KBUR), was provided by the South Coast AQMD and was used for the modeling analysis.

Receptors for AERMOD

The modeling grid consisting of three parts was used for the dispersion modeling analysis: (1) receptors along the perimeter of the City of Burbank facility with a spacing of approximately 50 meters. (2) receptors spaced 100 meters apart extending from the previous receptors to approximately three kilometers from the property line, and (3) receptors spaced 250 meters apart from the previous receptors to approximately two kilometers. In addition to the above receptor coverage, a fine grid of receptors (100 meter grid) centered on the location of the maximum predicted impacts as determined from the results of coarse-grid (250 meter distance grid) receptor modeling. Thus, receptors up to about five kilometers from the facility boundary were selected for modeling analysis. Discrete receptors within one mile of the MPP stack also located at sensitive receptors (e.g., schools and hospitals, etc.).

Note that all coordinates for sources and receptors were specified in North American Datum (NAD)83, UTM Zone 11. Receptor grid points outside the project boundary with grid spacing of 100 meters or more were placed so that individual grid points are placed at UTM coordinates ending in “00”.

Receptor elevations and hill heights were assigned using USEPA AERMAP and commercially available digital terrain elevations developed by the United States Geological Survey by using its National Elevation Dataset (NED). The NED data provided terrain elevations with 1-meter vertical resolution and (1 arc-second) 30-meters horizontal resolution based on a UTM coordinate system. For each receptor location, the terrain elevation was set to the elevation for the closest NED grid point.-meters horizontal resolution based on a UTM coordinate system. For each receptor location, the terrain elevation was set to the elevation for the closest NED grid point.

Building Downwash

The USEPA’s guidance was followed to address the potential influence on the concentrations from structures located near point emission sources. The latest building downwash program (BPIPPRM Version 04274) was used to identify the structures required to be included in the AERMOD model and it was used to address building downwash effect. This building downwash program was also used to estimate the direction-specific building dimensions, which are required as inputs by the AERMOD dispersion model, to address the influence of nearby structures on the ambient concentrations.

Source Parameters

The emissions from the MPP (combustion turbine and the duct burner) were modeled as a point source. The source release parameters included exit velocity, exit temperature, stack height and stack diameter.

A summary of the CO 1-hour average emissions (g/sec) and other source release parameters for the recommissioning scenario (all phases) is provided in Table 4-6.

The CO 1-hour average emissions (g/sec) and other source release parameters for the phases of recommissioning scenario selected for dispersion modeling analysis are provided in Table 4-7.

A summary of the CO 1-hour average emissions (g/sec) and other source release parameters for startup, normal operation, and shutdown scenarios is provided in Table 4-8.

A summary of the PM10 1-hour average emissions (g/sec) and other source release parameters for normal operating scenario (CT + DB operation) is provided in Table 4-9.

For estimating the annual average emissions (g/sec), it was conservatively assumed that the CT and DB will operate together for 1,000 hours and only CT will operate for 7,256 hours during a year. The remaining period of 252 hours, MPP will be under recommissioning. A summary of the PM10 annual average emissions and other source release parameters is provided in Table 4-10.

A summary of the SOx 1-hour average emissions (g/sec) and other source release parameters for normal operating scenario (CT + DB operation) is provided in Table 4-11.

For estimating the worst-case 8-hour average CO concentration and 24-hour PM10 and SOx concentrations, 1-hr average emissions were used for all the operating scenarios described above.

Results of the Carbon Monoxide Air Dispersion Modeling Studies

The results of the modeling analysis for the recommissioning, startup, normal operation, and shutdown scenarios along with the applicable standards are provided in Table 4-12, which indicate that the maximum estimated CO 1-hr and 8-hr average concentrations during the above operating scenarios would not exceed the ambient air quality standards.

Results of the PM10 Air Dispersion Modeling Studies

The results of the modeling analysis for annual operating scenario described in Table 4-10 for five years of meteorological data are provided in Table 4-13. A review of the results of the modeling analysis indicated that highest annual average concentration of 0.26 $\mu g/m^3$ was associated with the Year 2022 meteorological data.

The 24-hr average PM10 concentration (see Table 4-15), and the highest annual average concentration estimated for the annual average modeling scenario along with the applicable standards are provided in Table 4-14, which indicated that the 24-hr PM10 concentration and the maximum estimated PM10 annual average concentration would not exceed the significance threshold established by the South Coast AQMD.

The results of the modeling analysis for the 24-hr normal operation scenario along with the applicable standard is provided in Table 4-15, which indicated that the maximum estimated PM10 24-hr average concentration during the normal operation scenario would not exceed the federal ambient air quality standard (NAAQS).

Results of the Sulfur Dioxide Air Dispersion Modeling Studies

The modeling analysis result for the normal operation scenario (1-hr 99th percentile concentration) along with the applicable standard is provided in Table 4-16, which indicates that the maximum estimated SO_2 1-hr 99th percentile concentration during the above operating scenario would not exceed the ambient air quality standard (NAAQS).

The results of the modeling analysis for the normal operation scenario (1-hr and 24-hr average concentrations) along with the applicable standards are provided in Table 4-17, which indicate that the maximum estimated SO_2 1-hr and 24-hr average concentrations during the above operating scenario would not exceed the ambient air quality standards (CAAQS).

Summary of the Air Dispersion Modeling Analysis (Rule 1303 Analysis)

The maximum estimated CO concentrations (modeled concentration plus the background concentration; 2,663 µg/m^3 1-hr average concentration and 2,039 µg/m^3 8-hr average concentration) would not result in violations of the 1-hour or 8-hour CO ambient air quality standards.

The results of the dispersion modeling studies also indicated that PM10 emissions from the MPP would not result in ambient air concentrations (1.4 µg/m^3 24-hr average concentration and 0.26 µg/m^3 annual average concentration) exceeding the significance thresholds established under Rule 1303, Table 2. In addition, the maximum estimated PM10 concentration (modeled concentration plus the background concentration; 65 µg/m^3 24-hr average concentration) would not result in violation of the 24-hour PM10 federal ambient air quality standard.

Partial AERMOD dispersion model output files for CO and PM10 are provided in Appendix C. These files also include the details of inputs used for air dispersion modeling. Complete input and output modeling files are being provided electronically on a flash drive.

Rule 1303(b)(2) – Emission Offsets

Rule 1303(b)(2) requires that all increases in emissions be offset unless exempt from offset requirements pursuant to Rule 1304. The emission offset ratios for PM10, SO_x, and VOC are 1.2 to 1. Rule 1304 (d)(2) exempts a facility from offsets if the post modification potential to emit (PTE) is less than the following: 4 tons per year of VOC; 4 tons per year of NO_x; 4 tons per year of SO_x; 4 tons per year of PM_{10}, and 29 tons per year of CO.

It has been determined that post modification VOC, SO_x, and PM10 PTEs would be greater than 4 tons of VOC, 4 tons of SO_x, and 4 tons of PM10 (see Table 4-19). Therefore, VOC, SO_x, and PM10 emission increases must be offset following the Rule 1306 emission offset calculations. In addition, because the MPP facility is a RECLAIM facility, it is subject to Rule 2005 for NOx Regional Trading Credit (RTC) requirements rather than to Regulation XIII requirements.

The details of the emission reduction credit (ERC) requirements for the MPP facility modification (Upgrade) are presented below. The following basic modes of operation of the MPP Upgrade consist of recommissioning, startup, normal operation, and shutdown. Therefore, ERC requirements have been analyzed for only four modes of operation.

Table 4-18 presents the monthly emissions of PM10, VOC and SOx for the upgraded MPP for two scenarios: (a) monthly emissions for the recommissioning month and (b) monthly emissions for the non-recommissioning month. Note that PM10 and SOx emissions for both scenarios are based on lower emission factors as described in Section 3. Table 4-18 also shows the monthly emission limits for these pollutants from the current Title V facility permit issued by the South Coast AQMD in 2022 for the MPP. In addition, Table 4-18 shows the monthly emission limits adjusted for lower emission factors for PM10 and SOx. A comparison of the permitted monthly emissions (column a, facility permit issued in 2022) with the estimated monthly emissions for the modified MPP (column d) indicated that there will be no increase in monthly PM10 and SOx emissions. However, there will be an increase of 606.6 pounds of VOC emissions. Therefore, no additional ERCs for PM10 or SOx will be required for the proposed modifications to the MPP facility.

A comparison of the permitted monthly emissions (column b, monthly emission limits adjusted for lower emission factors for PM10 and SOx) with the estimated monthly emissions for the modified MPP (column d) indicated that there will an increase in monthly PM10 and SOx emissions.

The above analysis of the monthly PM10, SOx and VOC emission data indicated that no additional ERCs for PM10 or SOx will be required for the proposed modifications to the MPP facility. However, additional ERC for VOC emissions will be required. In addition, the monthly emission limits for emissions of PM10, SOx and VOCs will change as provided in Table 4-18, Column “d”. Furthermore, CO monthly emission limit may change as provided in Table 4-18, Column “c”.

The average daily VOC emission corresponding to the monthly increase in VOC emissions was estimated at 20 lb (596.6 lb/30). Therefore, 24 lb/day of VOC ERC (20 lb x 1.2 Offset Ratio) will be required for the MPP modifications. BWP/SCPPA will purchase the required VOC ERCs from the open market. Therefore, compliance with Rule 1303 is expected.

Rule 1303(b)(4) – Facility Compliance

The MPP is currently in compliance with all applicable rules and regulations of the South Coast AQMD.

Rule 1303(b)(5) – Major Polluting Facilities

According to the Rule 1303(b)(5), any new major polluting facility or a major modification at an existing major polluting facility shall comply with the following requirements: (1) Alternative Analysis and (2) Statewide Compliance. The California Environmental Quality Act (CEQA) process is being performed as part of amending the Application for Certification for the proposed MPP Upgrade 2024 project, This document will be submitted to the California Energy Commission (CEC).

Rule 1303(b)(5)(C) – Protection of Visibility

This rule requires that a modeling analysis be conducted to assess the impacts of project emissions on plume visibility in nearby Class I areas if the net emission increase from the new or modified source exceeds 15 tons/year of PM10 or 40 tons/year of NOx and the location of the source, relative to the closest boundary of a specified federal Class I area, is within the distances specified in the rule. The net increase in NOx and PM10 emissions from the MPP are estimated to be less than 40 tons/yr and 15 tons/yr, respectively, which are less than the emission increase thresholds. Therefore, the MPP upgrade project is exempt from plume visibility analysis. The details of NOx and PM10 emission estimates are provided in Table 4-19.

Rule 1325 – Federal PM2.5 New Source Review Program

Rule 1325, adopted June 3, 2011 (amended January 4, 2019) regulates sources under the Federal New Source review Program for $PM_{2.5}$ emissions. This Rule applies to facilities that are a major source of $PM_{2.5}$. As per Rule 1325, the new major polluting facility; or major modification to a major polluting facility; or any modification to an existing facility that would constitute a major polluting facility in and of itself will have to meet the following requirements:

1. Lowest Achievable Emission Rate (LAER) is employed for the new source or for the actual modification to an existing source; and.
2. Emission increases shall be offset at an offset ratio of 1.1:1 for PM2.5 and the ratio required in XIII or Rule 2005 for NOx and SOx as applicable; and
3. Certification is provided by the owner/operator that all major sources, as defined in the jurisdiction where the facilities are located, that are owned or operated by such person in the State of California are subject to emission limitations and are in compliance or on a schedule for compliance with all applicable limitations and standards under the Clean Air Act; and
4. An analysis is conducted of alternative sites, sizes, production processes, and environmental control techniques for such proposed source and demonstration made that the benefits of the proposed project outweigh the environmental and social costs associated with that project.

The threshold for a Major Polluting facility is 70 tons/yr [Rule 1325(b)(4)]. The MPP facility PTE for $PM_{2.5}$ is 38.4 tons/yr, which is less than the 70 tons/yr; therefore, Rule 1325 does not apply to the MPP. Additional details of PM2.5/PM10 emissions are provided in Table 3-25.

4.1.13 Regulation XIV – Toxics

Rule 1401 – New Source Review of Toxic Air Contaminants

Significance Criteria

According to Rule 1401, the permit to construct a new, relocated or modified permit unit will be denied if emissions of any TAC listed in Table I may occur, unless the following conditions are met:

(1) MICR and Cancer Burden

The cumulative increase in MICR, which is the sum of the calculated MICR values for all toxic air contaminants emitted from the new, relocated, or modified permit unit, will not result in any of the following:

(A) An increased MICR greater than one in one million ($1.0x10^{-6}$) at any receptor location, if the permit unit is constructed without best available control technology for toxics (T-BACT).

(B) An increased MICR greater than ten in one million ($1.0x10^{-5}$) at any receptor location, if the permit unit is constructed with T-BACT.

(C) A cancer burden greater than 0.5 (cancer burden is an estimate of the increased number of cancer cases in a population subject to lifetime individual cancer risk of greater than or equal to one in a million).

(2) Chronic Hazard Index

The cumulative increase in total chronic HI for any target organ system due to total emissions from the new, relocated, or modified permit unit will not exceed 1.0 at any receptor location.

(3) Acute Hazard Index

The cumulative increase in total acute HI for any target organ system due to total emissions from the new, relocated, or modified permit unit will not exceed 1.0 at any receptor location.

Emission Estimation Of Toxic Air Contaminants

Details of TAC emissions from the MPP are provided in Section 3.

Risk Assessment Technique

A Tier 4 cancer risk analysis was performed using the Hotspots Analysis and Reporting Program (HARP2) software package. Air dispersion modeling was performed using the USEPA guideline model AERMOD (Version 23132) following the modeling protocol approved by the South Coast AQMD for the MPP Upgrade Project. A copy of the modeling and health risk assessment protocol is provided in Appendix C

Health risks potentially associated with the estimated concentrations of TACs in ambient air were characterized in terms of excess lifetime cancer risks (for substances listed by OEHHA as cancer causing), or comparison with reference exposure levels for non-cancer health effects (for substances listed by OEHHA with non-cancer causing effects). Receptor locations were evaluated to be residential or industrial, based on aerial photographs of the vicinity surrounding the facility.

The evaluation of potential non-cancer health effects from exposure to short-term and long-term concentrations in air was performed by comparing modeled concentrations at the MEIR and MEIW with reference exposure levels (RELs). An REL is a concentration in ambient air at or below which no adverse health effects are anticipated. Potential non-cancer effects were evaluated by calculating a ratio of the modeled concentration in air and the REL. This ratio is the hazard quotient. The inhalation cancer potency and oral slope factor values and RELs used to characterize health risks associated with modeled concentrations in air are included in the HARP model and represent the Consolidated Table of Office of Environmental Health and Hazard Assessment (OEHHA)/Air Resources Board (ARB) Approved Risk Assessment Health Values.

The health risk assessment included potential health impacts from inhalation, soil ingestion, dermal absorption and mother’s milk as required by OEHHA guidelines. A secondary exposure pathway through the ingestion of crops (except home grown vegetable gardens) was not considered, because there are no commercial agricultural operations in the MPP vicinity. In addition, exposure through ingestion of fish, meat, eggs, and dairy products were not considered, because there are no known facilities producing meat, fish, dairy, poultry, or egg products in the MPP vicinity. The assessment included conservative assumptions such as 30-year exposure duration for residential receptors and 25-year exposure duration for commercial/industrial receptors. Additional details of the methodology followed for performing the HRA are provided in the modeling protocol in Appendix C.

Health Risk Modeling

Source Parameters

The source parameters used for performing AERMOD dispersion modeling are provided in Table 4-20.

Cancer Risk Analysis

The HRA results are shown in Tables 4-21, 4-22 and 4-23. The results of the carcinogenic risk assessment presented in Tables 4-21, 4-22 and 4-23 show that the MEIR and MEIW will be lower than one in a million. The maximum MEIR will be 0.32 in a million. For residential receptors, formaldehyde and benzopyrene emissions were the biggest contributor to the carcinogenic risk. Inhalation pathway was identified to be the dominant exposure pathway for formaldehyde and acetaldehyde.

Non Cancer Risk Analysis

Chronic non-cancer risk was estimated by calculating the chronic hazard index (HI), which was calculated by dividing the long-term concentration of each TAC by the chronic reference exposure level and then summing the individual HIs following the South Coast AQMD health risk assessment guidelines. Acute non-cancer risk was also calculated following the procedure described above for the chronic hazard index. Acute risk was calculated separately for each year of available meteorological data to determine the maximum impact.

The chronic and acute HI results are also shown in Tables 4-21, 4-22 and 4-23. The maximum chronic HI was estimated at 0.003, which is lower than chronic HI threshold of 1.0. The maximum acute HI was estimated at 0.005, which is also lower than acute HI threshold of 1.0.

The HARP model output reports are provided electronically on a flash drive. Complete input and output modeling files are also provided electronically on a flash drive.

Conclusions

The HRA results for the MPP show that maximum cancer risk, acute hazard index, and chronic hazard index will be 0.32 in a million,0.005, and 0.003, respectively at the MEIR. These values are within the Rule 1401 thresholds for maximum cancer risk, (1 in a million), acute hazard index (1.0) and the chronic hazard index (1.0).

4.1.14 Regulation XVII – Prevention of Significant Deterioration (PSD)

Rule 1703 PSD Analysis

The MPP is located in the SCAB, an area geographically under the jurisdiction of the SCAQMD.

Prevention of Significant Deterioration (PSD) analysis applies to new major stationary sources and major modifications to existing major stationary sources. A major source is a listed facility (one of the 28 PSD source categories listed in the federal Clean Air Act) that emits at least 100 tons/year of a listed PSD pollutant, or any other facility that emits at least 250 tons/year of a listed PSD pollutant. The MPP area is currently classified as an attainment area for CO, PM10, NO_2, and SO_2.

For a combined cycle power generating facility, the major source threshold is 100 tons per year based on actual emissions or potential to emit. In case the facility is deemed a major source, Rule 1702 further defines a significant emission increase as 40 tons/year or more of either NOx or SOx, 100 tons/year of CO, or 15 ton/year of PM10 emissions over the emissions before the modifications at the stationary source [Rule 1706(c)(1)(B)(i)]. The actual emissions before modifications are to be determined during the two consecutive years in the previous five year period immediately preceding the date of permit application. Future potential annual emissions (first year of operation) of CO, PM10, NOx and SOx from MPP upgrade project are presented in Table 3-19.

MPP is an existing minor source for CO, NOx, PM10 and SOx (see Table 3-11) and will continue to be a minor source after the proposed changes under this permit application (see Table

3-25). Therefore, this permit application will not constitute a major modification in and of itself, and provisions of Rule 1703 (PSD analysis) will not apply for modifications to the MPP facility.

Rule 1714 – Prevention of Significant Deterioration for Greenhouse Gases

Rule 1714 adopted November 5, 2010 (amended March 1, 2019) established preconstruction review requirements for greenhouse gases (GHG). The provisions of this rule apply only to GHGs as defined by EPA to mean the air pollutant as an aggregate group of six GHGs: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). The provisions of this rule apply to any source and the owner or operator of any source subject to any GHG requirements under 40 Code of Federal Regulations Part 52.21. It means that SCAQMD Rule 1714 requires GHG BACT analysis for sources that trigger the above mentioned federal requirements.

In the case of Utility Air Regulatory Group (UARG) vs. EPA (No. 12-1146), the U.S. Supreme Court held that emission of GHGs alone cannot trigger PSD applicability, but that once sources trigger PSD review due to their criteria pollutant emissions, such sources must limit emissions of GHG through BACT. As discussed above, the criteria pollutant emissions from the proposed modifications to the operating scenario for MPP do not exceed the significance levels set forth in Rule 1703; therefore GHG BACT analysis is not required under South Coast AQMD Rule 1714.

4.1.15 Regulation XX – Regional Clean Air Incentives Market (RECLAIM)

Rule 2005 – New Source Review for RECLAIM

Rule 2005 applies to the NOx emissions from the MPP. The rule for NOx emissions requires new sources or modifications to the existing sources to provide RECLAIM Trading Credits (RTCs), perform a modeling analysis, and meet BACT limits. Each of these requirements is discussed in further detail below.

Rule 2005(b)(1)(A) – BACT

As described above under sub-section 4.1.11, BWP/SCPPA is proposing to average the NOx emission limit of 2 ppmv over 1-hour (1-hr block average) to demonstrate compliance with Rule 1135. Therefore, MPP is expected to be in compliance with the South Coast AQMD BACT requirements.

Rule 2005(b)(2)(A) – RECLAIM TRADING CREDITS (RTCs)

Rule 2005(b)(2)(A) requires that a modified facility provide sufficient RTCs to offset emissions prior to the first year of operation on a 1-to-1 basis. Furthermore, paragraph (b)(2)(B) states that the RTCs must comply with the zone requirements of Rule 2005(e). The facility is located in Coastal Zone and is in Cycle 1. Thus, RTCs may only be obtained from Coastal Zone.

Table 3-25 presents a summary of the first year annual NOx emissions (138,232 lbs) from the modified facility (after implementing the changes in the permit conditions). This includes 3,651 lbs of NOx emissions from the duct burner. The amount of first year RTCs required is estimated at 138,232 lbs (NOx emission offset on a 1-to-1 basis). This NOx RTC requirement of 138,232 lbs is based on 84.9% capacity factor of operation for the MPP.

BWP/SCPPA will either purchase the required NOx RTCs from the open market or use credits from the existing MPP. Therefore, compliance with Regulation XX, Rule 2005, is expected.

Rule 2005(b)(B) – Modeling

Rule 2005(b)(B) requires the performance of air dispersion modeling to demonstrate that the operation of the new or modified source(s) will not cause a violation of the NO_2 ambient air quality standard. The details of the air dispersion modeling studies performed for the MPP modification project to demonstrate compliance with Rule 2005 are presented below.

Significance Criteria

According to Rule 2005, the South Coast AQMD will not approve an application for a facility permit authorizing construction or installation of a new or modified source unless the applicant demonstrates that the operation of the new source(s) will not cause a violation of the NO_2 ambient air quality standards (AAQS) as specified in Table 4-2. This requires that the dispersion model predicted NO_2 concentrations be added to the highest monitored background concentration levels in the area from the last three years and compared to the AAQS. The historical ambient air quality for NO_2 is provided in Tables 4-24 and 4-25 for the last three years: 2021, 2022, and 2023 [data from South Coast AQMD (East San Fernando Valley (North Hollywood (NOHO): 060374010) Monitoring Station].

It may be noted that for NO_2, the form of 1-hr California and National Ambient Air Quality Standards (CAAQS and NAAQS) are different. The form for the 1-hr NO_2 NAAQS is the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations whereas for the CAAQS, it is based on the monitored NO_2 1-hr average concentrations.

Emission Estimation of Oxides of Nitrogen

The details of NOx emission calculations are provided in Section 3.

Dispersion Modeling

Atmospheric dispersion modeling was conducted to analyze potential localized ambient air quality impacts associated with the operation of the modified MPP. Air dispersion modeling was performed following the modeling protocol approved by the South Coast AQMD.

Source Parameters

The emissions from the MPP were modeled as a point source. The source release parameters included exit velocity, exit temperature, stack height and stack diameter.

A summary of the NOx 1-hour average emissions (g/sec) and other source release parameters for recommissioning, normal operation, startup and shutdown scenarios is provided in Table 4-19.

The details of the operating scenario for estimating NOx emissions for the first year of operation are provided in Table 3-3. A summary of NOx annual average emissions and other source release parameters used for modeling analysis is provided in Table 4-27.

Results of the Oxides of Nitrogen Air Dispersion Modeling Studies – Compliance with NO_2 1-hr Average CAAQS

The results of the air dispersion modeling analysis, demonstrating compliance with NO_2 1-hr average CAAQS are provided in Table 4-28.

Startup Scenario

The results of the modeling analysis for the startup scenario along with the applicable standard is provided in Table 4-28, which indicate that the maximum estimated NO_2 1-hr average concentration during the startup scenario would not exceed the CAAQS.

Normal Operation Scenario

The results of the modeling analysis for the normal operating scenario along with the applicable standard is provided in Table 4-28, which indicate that the maximum estimated NO_2 1-hr average concentration during the normal operation scenario would not exceed the CAAQS.

Shutdown Scenario

The results of the modeling analysis for the shutdown scenario along with the applicable standard is provided in Table 4-28, which indicate that the maximum estimated 1-hr average NO_2 concentration during the shutdown scenario would not exceed the CAAQS.

Results of the Oxides of Nitrogen Air Dispersion Modeling Studies – Compliance with NO_2 1-hr Average NAAQS

The results of the air dispersion modeling analysis, demonstrating compliance with NO_2 1-hr average NAAQS are provided in Table 4-29.

Startup Scenario

The results of the modeling analysis for the startup scenario along with the applicable standard is provided in Table 4-29, which indicate that the maximum estimated NO_2 1-hr average concentration during the startup scenario would not exceed the NAAQS.

Normal Operation Scenario

The results of the modeling analysis for the normal operating scenario along with the applicable standard is provided in Table 4-29, which indicate that the maximum estimated NO_2 1-hr average concentration during the normal operation scenario would not exceed the NAAQS.

Shutdown Scenario

The results of the modeling analysis for the shutdown scenario along with the applicable standard is provided in Table 4-29, which indicate that the maximum estimated 1-hr average NO_2 concentration during the shutdown scenario would not exceed the NAAQS.

Results of the Oxides of Nitrogen Air Dispersion Modeling Studies – Compliance Analysis with NO_2 Annual Average AAQS

The results of the air dispersion modeling analysis for operating scenario described in Table 4-27 for five years of meteorological data are provided in Table 4-30. A review of the results of the modeling analysis indicated that highest annual average NOx concentration of 0.46 $\mu g/m^3$ (dispersion model predicted concentration) was associated with the Year 2022 meteorological data. The dispersion model predicted maximum NOx concentration (0.46 $\mu g/m^3$) was multiplied by the USEPA's annual average ambient ratio factor of 0.75 to determine the maximum annual average ground level NO_2 concentration (0.26 $\mu g/m^3$).

The highest annual average concentration estimated for the annual average modeling scenario along with the applicable standard is provided in Table 4-31, which indicates that the maximum estimated NO_2 annual average concentration would not exceed the ambient air quality standards (CAAQS or NAAQS).

Summary of the NOx Air Dispersion Modeling Analysis

The maximum estimated NO_2 1-hr average concentration of 166.3 µg/m^3 (modeled concentration plus the background concentration) would not result in violation of the 1-hour NO_2 ambient air quality standard of 339 µg/m^3 (CAAQS).

The results of the dispersion modeling studies also indicated that the maximum estimated NO_2 1-hr average 98th percentile concentration of 101.75 µg/m^3 (modeled concentration plus the background concentration) would not result in violation of the 1-hour NO_2 ambient air quality standard of 188 µg/m^3 (NAAQS). In addition, the maximum estimated NO_2 annual average concentration of 26.4 µg/m^3 (modeled concentration plus the background concentration) would not result in violation of the California or federal NO_2 ambient air quality standard (California AAQS of 57 µg/m^3 and federal AAQS of 100 µg/m^3).

Partial AERMOD dispersion model output files are provided in Appendix C. These files also include the details of inputs used for air dispersion modeling. Complete input and output modeling files are provided electronically on a flash drive.

Rule 2005(g)(4) – Protection of Visibility

Rule 2005(g)(4) requires that a modeling analysis be conducted to assess the impacts of project emissions on plume visibility in nearby Class I areas if the net emission increase from the new or modified source exceeds 40 tons per year of NOx and the location of the source, relative to the closest boundary of a specified federal Class I area, is within the distances specified in the rule. The net increase in NOx emissions from the MPP is estimated to be less than 40 tons/yr, which is less than the emission increase threshold. Therefore, the MPP modification project is exempt from plume visibility analysis. The details of annual NOx emission increase summary are provided in Table 4-19.

Rule 2012 – Monitoring, Reporting, and Recordkeeping for Oxides of Nitrogen Emissions

MPP, is currently in compliance with all monitoring, record-keeping, and reporting requirements of NOx RECLAIM rule. Continued compliance is expected.

4.1.16 Regulation XXX – Title V

MPP is subject to Title V requirements. The current facility permit was issued on February 16, 2022. The proposed facility modification changes in the permit conditions is considered a Significant Permit Revision as defined in Rule 3000. Rule 3005(f) identifies the procedures to be followed for processing a Significant Revision application.

4.2 State Regulations

4.2.1 California Environmental Quality Act (CEQA)

An amendment to the California Energy Commission, Application for Certification is being prepared for this project (change in permit conditions).

4.3 Federal Regulations

4.3.1 40 CFR Part 60 Subpart Da – Standards of Performance (NSPS) for Electric Utility Steam Generating Units

This NSPS applies to electric utility steam generating units rated over 250 MMBtu/hr heat input of fossil fuel, which were constructed, modified, or reconstructed after September 18, 1978. The fired heat recovery steam generator (HRSG) is subject to this subpart because its heat input rating (duct burner heat input rating) is 583 MMBtu/hr that is greater than the applicability standard of 250 MMBtu/hr in the rule. The applicable emission standards under this subpart are as follows:

NOx 0.2 lb/MMBtu

PM 0.03 lb/MMBtu (construction commenced prior to February 28, 2005)

SO_2 0.02 lb/MMBtu

The regulations require the installation of a CEMS to measure NOx and O_2. A CEMS for opacity is not required because the unit burns natural gas exclusively and does not use post-combustion controls for PM and SO_2 [60.49Da(u)(2)]. A PM CEMS is optional under 60.49Da(t). In lieu of a PM CEMS, a CO CEMS may be installed. Also, an initial performance test is required.

The calculated emissions from the gas turbine/duct burner are as follows:

NOx 0.0074 lb/MMBtu

PM 0.0051 lb/MMBtu

SO_2 0.0006 lb/MMBtu

The calculated emissions and the emissions from the compliance source testing are all lower than subpart Da requirements. The compliance source testing was performed as required. Continued compliance is expected.

4.3.2 40CFR Part Subpart YYYY – NESHAPS for Combustion Turbines

EPA has promulgated the National Emission Standards for Hazardous Air Pollutants (NESHAP) applicable to combustion turbines. NESHAPs apply to sources that are classified as major for hazardous air pollutants. A major source is a facility that has emissions of 10 tons per year of any single hazardous air pollutant (HAP) or 25 tons per year of a combination of HAPs. Subpart YYYY establishes national emission limitations and operating limitations for hazardous air pollutants from stationary combustion turbines. Subpart YYYY limits the emissions of formaldehyde to 91 parts per billion by volume and on a dry basis (ppbvd) at 15 percent O_2. If the source owner uses an oxidation catalyst to comply, the 4-hour rolling average of the catalyst inlet temperature must be within the range suggested by the catalyst manufacturer. If the source owner does not use an oxidation catalyst for compliance, the source owner must implement selected operating limitations to insure compliance with the formaldehyde limit. The source owner must develop these operating limitations and petition the agency for approval.

In addition to the above limitations, Subpart YYYY requires performance tests to demonstrate compliance and provide continuous monitoring of certain parameters. For turbines equipped with an oxidation catalyst the inlet temperature to the catalyst system must be monitored. If operating limitations are chosen for compliance, then the operating limitations must be continuously monitored.

Table 3-26 presents the emissions of HAPs from the MPP facility (gas turbine and the duct burner). The individual HAP of concern with the highest emission rate is formaldehyde (3.36 ton/yr). As seen in the table, formaldehyde emissions will be under the 10-ton-per-year major source threshold. The total HAP emissions (6.14 ton/yr) will also be under the 25-ton-per-year major source threshold. Therefore, the MPP facility is exempt from Subpart YYYY requirements.

4.3.3 40CFR Part 60 Subpart TTTT Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units

The final rule entitled "Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Generating Units (New Source Rule)," 80 FR 64510 (October 23, 2015), was codified as 40 CFR Part 60, Subpart TTTT, and became effective on October 23, 2015. The New Source Rule established national emission standards to limit emissions of carbon dioxide (CO_2) from newly constructed, modified, and reconstructed affected fossil fuel-fired electric utility generating units (EGUs). In order to comply with the Presidential Executive Order on Promoting Energy Independence and Economic Growth, signed by President Trump on 3/28/17, then-EPA Administrator Scott Pruitt issued the following Federal Register notice for the New Source Rule. The Review of the Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Generating Units, 82 FR 16330 (April 4, 2017) announced that the EPA is reviewing *The New Source Rule* and, if appropriate, will as soon as practicable and consistent with law, initiate reconsideration proceedings to suspend, revise or rescind this rule. On December 6, 2018, EPA proposed amendments to Subpart TTTT in Review of Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units, 83 FR 65424 (12/20/2018), for which comments were due by February 2019. After further analysis and review, EPA proposed to determine that the best system of emission reduction (BSER) for newly constructed coal-fired units, is the most efficient demonstrated steam cycle in combination with the best operating practices. This proposed BSER would replace the determination from the 2015 rule, which identified the BSER as partial carbon capture and storage. The EPA is not proposing to amend and is not reopening the standards of performance for newly constructed or reconstructed stationary combustion turbines.

Applicability Requirements to this Subpart - Except as provided for in paragraph (b) of this section, the GHG standards included in this subpart apply to any stationary combustion turbine that commenced construction after January 8, 2014 or commenced reconstruction after June 18, 2014 that meets the relevant applicability conditions in paragraphs (a)(1) and (a)(2) of this section.

(1) Has a base load rating greater than 260 GJ/h (250 MMBtu/h) of fossil fuel (either alone or in combination with any other fuel), and

(2) Serves a generator capable of selling greater than 25 MW of electricity to a utility power distribution system.

§60.5580 defines "base load rating" to mean "the maximum amount of heat input (fuel) that an EGU can combust on a steady state basis, as determined by the physical design and characteristics of the EGU at ISO conditions…." ISO conditions mean 15 deg C (59 °F) ambient temperature, 60% relative humidity, and 14.70 psia. As mentioned in Section 2, the MPP power island includes a natural gas fired, General Electric Model PG7241FA (7FA.03) combustion turbine generator. The gas turbine is rated at 1,787 MMBtu/hr (HHV). The GT exhausts into a fired (using a duct burner) heat recovery steam generator (HRSG). Steam from the HRSG is admitted into a steam turbine generator (STG). The duct burner (DB) is rated at 583 MMBtu/hr (HHV). Note this load rating will increase after the MPP Upgrades, which exceeds the applicability threshold of 250 MMBtu/hr.

In addition, the total gross power output from the existing CTG (181.1 MW) and the STG (142.0 MW) is 323.1 MW which exceeds the applicability threshold of 25 MW. Therefore, the turbine will be subject to Subpart TTTT if the construction of the turbines commenced after January 8, 2014, or the reconstruction commenced after June 18, 2014.

40 CFR 60 Subpart A—General Provisions provides definitions for “commenced,” “construction” and “reconstruction,” as shown below.

§60.2 Definitions – “**Commenced”** means, with respect to the definition of new source in section 111(a)(2) of the Act, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

Construction means fabrication, erection, or installation of an affected facility.

• §60.15 Reconstruction

(b) “Reconstruction” means the replacement of components of an existing facility to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and

(2) It is technologically and economically feasible to meet the applicable standards set forth in this part.

(c) “Fixed capital cost” means the capital needed to provide all the depreciable components.

The MPP turbine will not be subject to Subpart TTTT after the turbine upgrade as explained below. The construction of the turbines will not commence after the January 8, 2014 applicability date, as the construction commenced prior to 2005. In addition, the turbine upgrade project will commence after the January 8, 2014 applicability date, but the project does not meet the definition of “reconstruction.” According to the information provided by BWP (see Ref. 16 in Appendix A-27), the MPP upgrade cost will be about $72 million. However. it will cost around $750 million to build an entirely new plant of this capacity. Because the upgrade cost for the MPP turbine ($72 million) does not exceed the 50% of the $750 million cost for building an entirely new plant, the MPP upgrade is not a “reconstruction.” Therefore, the MPP turbine will not be subject to Subpart TTTT.

4.3.4 40CFR Part 64 – Compliance Assurance Monitoring (CAM)

The CAM regulation applies to emission units at major stationary sources required to obtain a Title V Permit, which use control equipment to achieve a specified emission limit and which have emissions that are at least 100% of the major source thresholds on a pre-control basis (NOx and VOC = 10 tpy; CO =50 tpy, PM10 =70 tpy; SOx = 100 tpy; single HAP = 10 tpy; and Total HAPS = 25 tpy). The rule is intended to provide “reasonable assurance” that the control systems are operating properly to maintain compliance with the emission limits. MPP is a major source of CO, NOx and VOC (but not for PM10, or SOx), and the combustion turbine is subject to an emission limit for CO, NOx and VOC.

Combustion turbine is subject to NOx BACT emission limit of 2.0 ppm (1-hour block average). Control equipment in the form of an SCR is used to comply with this NO_X limit. As a NOx Major Source under RECLAIM, the combustion turbine is required to have CEMS under Rule 2012, the use of a continuous monitor to show compliance with an emission limit is exempt from CAM under Rule 64.2(b)(vi).

Combustion turbine is subject to CO BACT emission limit of 2.0 ppm (1-hour average). Control equipment in the form of oxidation catalyst is used to comply with this CO limit. As a CO Major Source, the combustion turbine is required to use a CO CEMS under Rule 1303-BACT. The use of a continuous monitor to show compliance with an emission limit is exempt from CAM under Rule 64.2(b)(vi).

Combustion turbine is subject to VOC BACT emission limit of 2.0 ppm (1-hour average). Control equipment in the form of oxidation catalyst is used to comply with this VOC limit. The oxidation catalyst is effective at operating temperatures above 300°F. The facility is required to maintain a temperature gauge in the exhaust condition D12.2), which will measure the exhaust temperature on a continuous basis and record the temperature on an hourly basis. This will ensure that the oxidation catalyst is operating properly. In addition, compliance with the VOC permit limit will be determined by periodic source testing. Based on the above, compliance with the CAM rule is expected.

4.3.5 40CFR Parts 72, 73, 74 and 75 – Acid Rain Program

MPP is subject to the requirements of the federal acid rain program, because the combustion turbine is a utility greater than 25 MW. The acid rain program is similar to RECLAIM in that facilities are required to cover SO_2 emissions with "SO_2 Allowances" (similar to RTCs), or purchase of SO_2 on the open market. The facility is also required to monitor SO_2 emissions through use of fuel gas meters and gas constituent analysis, or if fired with pipeline quality natural gas, as in the case of the MPP, a default emission factor of 0.0006 lb/MMBtu is allowed. SO_2 mass emissions are to be recorded every hour. NOx and O_2 must be monitored with CEMS in accordance with the specifications of Part 75. Under this program, NOx and SOx emission will be reported directly to the USEPA. Compliance is expected.

4.3.6 EPA's New Rule to Regulate GHG Emissions from Electric Generating Units under Clean Air Act Section 111

The EPA recently released its final rule to regulate GHG emissions from electric generating units at power plants under Section 111 of the Clean Air Act. The final rule updates the 111(b) standards for new and reconstructed (generally natural gas fired) stationary combustion turbines. EPA continues to rely upon carbon capture and sequestration for baseload units. The baseload units include the Units operating above 40% capacity factor. EPA has deferred finalizing GHG emissions guidelines for existing natural gas-fired units. The final rule effective date is July 8, 2024.

As described above in sub-section 4.3.3 (40CFR Part 60 Subpart TTTT), the MPP turbine is not expected to be subject to EPA's new Rule regulating GHG emissions from reconstructed natural-gas fired stationary combustion turbines.

Table 4-1
Emission Change from MPP Facility Modification (Upgrade 2024)

Pollutant	Emission From the Facility Modification (during Recommissioning)[a], lb/day	Emission From the Facility Modification (after recommissioning)[b], lb/day	Existing Emission From the Facility before Modification, lb/day	Maximum Change in Emissions from the Facility Modification, lb/day
CO	4,166	925.5	791.8[c]	3,374 (a-c)
VOC	589	167.3	145.2[c]	444 (a-c)
PM10	231	289.7	252.2[d]	37.5 (b-d)
SO_2	32	32.8	28.4[d]	4.4 (b-d)
NOx	857	869.9	747.3[c]	122.6 (b-c)

[a] Data from Table 3-13; [b] Data from Table 3-22; [c] Data from Table 3-11; [d] Data from Appendix A-44 (PM10 and SOx emissions are based on the revised emission factors).

Table 4-2
Ambient Air Quality Significance Thresholds

Pollutant and Averaging Time	Standard
PM10 24-hour PM10 annual geometric mean	2.5 $\mu g/m^3$ (change in concentration level, state) 1.0 $\mu g/m^3$(change in concentration level, state))
PM10 24-hour	150 $\mu g/m^3$ (federal)
CO 1-hour Ambient Air Quality Standard	40 mg.m^3 (federal) 23 mg/m^3 (state)
CO 8-hour Ambient Air Quality Standard	10 mg/m^3 (federal) 10 mg/m^3 (state)
NO_2 1-hour Ambient Air Quality Standard	188 $\mu g/m^3$ (federal, 98th percentile) 339 $\mu g/m^3$ (state)
NO_2 Annual Ambient Air Quality Standard	100 $\mu g/m^3$ (federal) 57 $\mu g/m^3$ (state)
SO_2 1-hour Ambient Air Quality Standard	196 $\mu g/m^3$ (federal, 99th percentile) 655 $\mu g/m^3$ (state)
SO_2 24-hour Ambient Air Quality Standard	105 $\mu g/m^3$ (state)

$\mu g/m^3$ = microgram per cubic meter; mg/m^3 = milligram per cubic meter

Table 4-3
Maximum 24-Hour Monitored PM10 Concentrations at the
Central LA (Los Angeles-North Main Street: 060371103)

Averaging Period	Maximum Monitored PM10 Concentration ($\mu g/m^3$)			
	2021	2022	2023	Maximum
24-Hour	64	60	57	64
$\mu g/m^3$ = microgram per cubic meter				

Table 4-4
Maximum 1-Hour and 8-Hour Monitored CO Concentrations at the
Central LA (Los Angeles-North Main Street: 060371103)

Averaging Period	Maximum Monitored CO Concentration ppm ($\mu g/m^3$)			
	2021	2022	2023	Maximum
1-Hour	2.0 (2,300)	1.7 (1,955)	1.4 (1,610)	2.0 (2,300)
8-Hour	1.6 (1,840)	1.5 (1,725)	1.2 (1,380)	1.6 (1,840)
ppm = parts per million, $\mu g/m^3$ = microgram per cubic meter				

Table 4-5
Maximum 1-Hour and 1-Hour 99th Percentile Monitored SO_2 Concentrations at the
Central LA (Los Angeles-North Main Street: 060371103)

Averaging Period	Maximum Monitored CO Concentration ppb ($\mu g/m^3$)			
	2021	2022	2023	Maximum
1-Hour	2.2 (5.8)	6.5 (17.0)	7.7 (20.2)	7.7 (20.2)
1-Hour, 99%ile	2.0 (5.2)	2.3 (6.0)	2.0 (5.2)	2.3 (6.0) Max
1-Hour, 99%ile	2.0 (5.2)	2.3 (6.0)	2.0 (5.2)	2.1 (5.5) Design
ppm = parts per million, $\mu g/m^3$ = microgram per cubic meter				

Table 4-6
CO and NOx Emission Rates (1-hour Average) and other Source Release Parameters for all Recommissioning Phases

Day of Task	Recommissioning Phase	NOx g/sec	CO g/sec	Exit Vel m/sec	Exit Temp K
1	1A	13.104	49.542	9.22	349.82
1	1B+1C	11.970	92.734	9.83	356.48
1	1D	1.134	2.457	12.46	376.48
1	1E	1.701	0.315	16.89	367.59
1	1F	0.855	0.288	12.46	376.48
2	2A	1.694	0.336	16.89	367.59
2	2B	0.857	0.294	12.46	376.48
3	3A	1.694	0.336	16.89	367.59
3	3B	0.857	0.294	12.46	376.48
4	4A	1.148	2.422	12.17	376.48
4	4B	0	0	0	0
5	5A	13.104	49.559	9.44	358.15
5	5B	16.002	58.715	9.56	361.48
5	5C	7.686	126.880	10.56	367.59
5	5D	1.701	0.315	12.46	376.48
5	5E	1.701	0.294	16.89	367.59
5	5F	0.854	0.294	12.46	367.48
6	6A	1.152	2.430	12.46	376.48
6	6B	1.701	0.315	16.89	367.59
6	6C	1.701	0.315	16.89	367.59
6	6D	0.853	0.291	12.46	376.48
7	7A	1.688	0.328	16.89	367.59
7	7B	1.134	2.419	12.46	376.48
7	7C	0.855	0.288	12.46	376.48

Table 4-6
CO and NOx Emission Rates (1-hour Average) and other Source Release Parameters for all Recommissioning Phases

Day of Task	Recommissioning Phase	NOx g/sec	CO g/sec	Exit Vel m/sec	Exit Temp K
8	8A	0.861	0.294	12.46	376.48
8	8B	No Gas Turbine Operation			
9	9	No Gas Turbine Operation			
10	10A1	13.104	49.580	9.22	349.82
10	10A2+BCD	11.844	53.801	10.38	361.48
10	10E	1.134	0.136	16.89	367.59
10	10F	0.854	0.294	12.46	376.48
11	11	0.420	0.378	20.01	365.37

Table 4-7
CO Emission Rate (1-hour Average) and other Source Release Parameters for the Recommissioning Phases Selected for Modeling Analysis

Details of Recommissioning Operation	CO Emission Rate (g/s)	Release Height (m)	Stack Temperature (K)	Exhaust Velocity (m/s)	Stack Diameter (m)
Day of Task 1, Phase 1B+1C	92.734	45.70	356.48	9.83	5.80
Day of Task 5, Phase 5C	126.880	45.70	367.59	10.56	5.80

Table 4-8
CO Emission Rate and other Source Release Parameters Selected for Air Dispersion Modeling Analysis for Startup, Normal, and Shutdown Operating Scenarios

Details of Operation	CO Emission Rate (g/s)	Release Height (m)	Stack Temperature (K)	Exhaust Velocity (m/s)	Stack Diameter (m)
Startup	12.348	45.70	361.6	7.20	5.80
Normal Operation (CT + DB)	1.518	45.70	356.4	20.10	5.80
Shutdown	18.360	45.70	361.6	7.20	5.80

Table 4-9
PM10 Emission Rate and other Source Release Parameters Used for Estimating 24-hr Average Concentrations for the Normal Operating Scenario (CT + DB Operation)

Details of Operation	PM10 Emission Rate (g/s)	Release Height (m)	Stack Temperature (K)	Exhaust Velocity (m/s)	Stack Diameter (m)
Normal Operation (CT + DB)	2.307	45.70	356.4	20.10	5.80

Table 4-10
PM10 Emission Rate and other Source Release Parameters
Used for Estimating Annual Average Concentrations (CT + DB Operation)

Details of Operation	PM10 Emission Rate (g/s)	Release Height (m)	Stack Temperature (K)	Exhaust Velocity (m/s)	Stack Diameter (m)
Normal Operation (CT + DB)	1.726	45.70	356.4	20.10	5.80

Table 4-11
SOx Emission Rate and other Source Release Parameters Selected for Air Dispersion Modeling Analysis
for Normal Operating Scenario

Details of Operation	SOx Emission Rate (g/s)	Release Height (m)	Stack Temperature (K)	Exhaust Velocity (m/s)	Stack Diameter (m)
Normal Operation (CT + DB)	0.242	45.70	356.4	20.10	5.80

Table 4-12
Rule 1303 New Source Review Modeling Analysis for CO Emissions

Averaging Time	CO Ambient Air Quality Standard (µg/m³)	Modeling Scenario	Modeled Conc. (µg/m³)	Background Conc. (µg/m³)	Total Impact (µg/m³)	Significant (Yes/No)
1-Hour Analysis						
1-Hour	23,000	Recommissioning (Phase 1B+1C)	253.06	2,300	2,553	No
1-Hour	23,000	Recommissioning (Phase 5C)	362.99	2,300	2,663	No
1-Hour	23,000	Startup	43.44	2,300	2,343	No
1-Hour	23,000	Normal Operation (CT + DB in operation)	2.29	2,300	2,302	No
1-Hour	23,000	Shutdown	64.60	2,300	2,365	No
8-Hour Analysis						
1-Hour	10,000	Recommissioning (Phase 1B+1C)	164.88	1,840	2,005	No
1-Hour	10,000	Recommissioning (Phase 5C)	198.63	1,840	2,039	No
8-Hour	10.000	Startup	28.05	1,840	1,868	No
8-Hour	10.000	Normal Operation (CT + DB in operation)	1.72	1,840	1,842	No
8-Hour	10.000	Shutdown	41.70	1,840	1,882	No

Table 4-13
Results of PM10 Annual Modeling Scenario Modeling Analysis
(PM10 Concentrations in μg/m^3)
Five Years of Meteorological Data

Modeling Scenario	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Maximum PM10 Concentration, μg/m^3
CT + DB in operation for 1,000 hours.	0.22	0.22	0.24	0.26	0.19	0.26

Table 4-14
Rule 1303 New Source Review Modeling Analysis for PM10 Emissions

Averaging Time	Significant Change in PM10 Air Quality Concentration (μg/m^3)	Scenario with Maximum PM10 Impact	Maximum PM10 Concentration (μg/m^3)	Significant (Yes/No)
24-hour	2.5	Normal Operation (CT + DB in operation)	1.40	No
Annual Geometric Mean	1.0	CT + DB in operation for 1,000 hours.	0.26	No

Table 4-15
Rule 1303 New Source Review Modeling Analysis for PM10 Emissions
24-hr Average Concentrations, Compliance with NAAQS

Averaging Time	PM10 Ambient Air Quality Standard (μg/m^3)	Modeling Scenario	Modeled Conc. (μg/m^3)	Background Conc. (μg/m^3)	Total Impact (μg/m^3)	Significant (Yes/No)
24-Hour	150	Normal Operation (CT + DB in operation)	1.4	64	65	No

Table 4-16
Modeling Analysis for SOx Emissions
1-hr Average Concentrations, Compliance with NAAQS

Averaging Time	SOx Ambient Air Quality Standard (µg/m³)	Modeling Scenario	Modeled Conc. (µg/m³)	Background Conc. (µg/m³)	Total Impact (µg/m³)	Significant (Yes/No)
1-Hour	196 99th percentile	Normal Operation (CT + DB in operation)	0.30	5.50	5.80	No

Table 4-17
Modeling Analysis for SOx Emissions
1-hr and 24-hr Average Concentrations, Compliance with CAAQS

Averaging Time	SOx Ambient Air Quality Standard (µg/m³)	Modeling Scenario	Modeled Conc. (µg/m³)	Background Conc. (µg/m³)	Total Impact (µg/m³)	Significant (Yes/No)
1-Hour	655	Normal Operation (CT + DB in operation)	0.36	20.20	20.56	No
24-Hour	105	Normal Operation (CT + DB in operation)	0.15	5.50	5.65	No

Table 4-18
Change in Monthly Emissions from MPP Upgrade

Pollutant	Monthly Emissions Limit for Existing MPP Facility (Permit Issued in February 2022, see Appendix C), lb/month (a)	Monthly Emissions Limit for Existing MPP Facility (Adjusted for Lower PM10 and SOx Emission Factors), lb/month (b)	Emissions from the Upgraded MPP Facility, Recommissioning Month, lb/month (c)	Emissions from the Upgraded MPP Facility, Non-Recommissioning Month, lb/month (d)	Change in Monthly Emissions from MPP Facility Upgrade, lb/month
CO	9,243	9,243	17,245.5	10,761.4	1,518.4 (d-b)
PM10	9,552	7,169	8,292.0	8,292.0	1,123 (d-b)
VOC	3,744	3,744	4,218.3	4,340.6	596.6 (d-b)
SO_2	1,022	814	943.2	943.2	129.2 (d-b)

Table 4-19
CO, NOx, PM10 and SOx Annual Emissions Increase Summary

Pollutant	Baseline (Actual) Emissions (tons/year)[a]	Future Potential Emissions, Modified MPP, 1st Year of Operation with Recommissioning (tons/year)[b]	Emissions Increase (tons/year)	Significant Emissions Increase Threshold (tons/year)	Emissions Increase Significance (Yes/No)
CO	12.9	55.6	42.7	-	-
NO_X	29.8	69.1	39.3	40	No-
PM10	29.2	38.4	9.2	15	No
SO_X	3.5	4.4	0.9	-	-

[a] Details of calculations are provided in Appendix A-28. Emission data is for the period August 2022 through July 2024.
[b] Emission calculations are based on 84.9% capacity factor. See Appendix A-29 for additional details.

Table 4-20
Source Parameters Used in Modeling for Health Risk Assessment

Operating Scenario	Release Height (m)	Temp. (K)	Stack Velocity (m/s)	Stack Diameter (m)
Normal Operation	45.70	356.4	20.10	5.80

Table 4-21
Results of the Health Risk Assessment for Residential Receptors (MEIR)

Maximum Individual Cancer Risk (per million)[a]	Chronic Hazard Index	Acute Hazard Index
0.32	0.00297	0.00524
[a] Value represents maximum impact off-facility, 30-year exposure		

Table 4-22
Results of Acute Hazard Index Analysis
Five Years of Meteorological Data

Parameter	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Maximum Acute Hazard Index
Acute Hazard Index	0.00497	0.00524	0.00493	0.0.00518	0.00505	0.00524

Table 4-23
Results of the Health Risk Assessment for Worker Receptors (MEIW)

Maximum Individual Cancer Risk	Chronic Hazard Index	Acute Hazard Index
0.02	0.00297	0.00524
[a] Value represents maximum impact off-facility, 25-year exposure		

Table 4-24
Maximum 1-Hour Monitored NO_2 Concentrations at the
East San Fernando Valley [North Hollywood (NOHO): 060374010]

Averaging Period	Maximum Monitored NO_2 Concentration ppb ($\mu g/m^3$)			
	2021	**2022**	**2023**	**Maximum**
1-Hour (CAAQS)	65.4 (122.9)	54.2 (101.9)	51.4 (96.6)	65.4 (122.9)
Annual	13.9 (26.1)	12.9 (24.3)	11.8 (22.2)	13.9 (26.1)
ppb = parts per billion, $\mu g/m^3$ = microgram per cubic meter				

Table 4-25
1-Hour NO_2 98th Percentile Concentrations at the
East San Fernando Valley [North Hollywood (NOHO): 060374010]

Averaging Period	98th Percentile NO_2 Concentration ppm			
	2021	**2022**	**2023**	**Mean**
1-Hour (NAAQS)	49.4 (92.9)	47.2 (88.7)	46.1 (86.7)	47.57 ppb 89.4 $\mu g/m^3$
ppb = parts per billion, $\mu g/m^3$ = microgram per cubic meter				

Table 4-26
NOx Emission Rate (1-hr Average) and other Source Release Parameters for Recommissioning, Startup, Normal, and Shutdown Operating Scenarios

Details of Operation	NOx Emission Rate (g/s)	Release Height (m)	Stack Temperature (K)	Exhaust Velocity (m/s)	Stack Diameter (m)
Recommissioning Phase 1A	13.104	45.70	349.82	9.22	5.80
Recommissioning Phase 5B	16.002	45.70	361.48	9.56	5.80
Startup	10.878	45.70	361.60	7.20	5.80
Normal Operation (CT + DB)	2.495	45.70	356.40	20.10	5.80
Shutdown	4.632	45.70	361.60	7.20	5.80

Table 4-27
NOx Emission Rate and other Source Release Parameters Used for Estimating Annual Average Concentrations (CT + DB Operation)

Details of Operation	NOx Emission Rate (g/s)	Release Height (m)	Stack Temperature (K)	Exhaust Velocity (m/s)	Stack Diameter (m)
Normal Operation (CT + DB)	2.389	45.70	356.40	20.10	5.80

Table 4-28
Rule 2005 New Source Review Modeling Analysis for NOx Emissions (1-hr NOx CAAQS)

Averaging Time	NO_2 Ambient Air Quality Standard ($\mu g/m^3$)	Modeling Scenario	Modeled MPP Conc. ($\mu g/m^3$)	Background Conc. ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Significant (Yes/No)
1-Hour	339	Recommissioning, Phase 1A	40.16	122.9	163.1	No
1-Hour	339	Recommissioning, Phase 5B	43.41	122.9	166.3	No
1-Hour	339	MPP in startup	38.27	122.9	161.2	No
1-Hour	339	MPP in normal operation with Duct Burner	3.77	122.9	126.67	No
1-Hour	339	MPP in shutdown	16.30	122.9	139.25	No

Table 4-29
Rule 2005 New Source Review Modeling Analysis for NOx Emissions (1-hr NOx NAAQS)

Averaging Time	NO_2 Ambient Air Quality Standard ($\mu g/m^3$)	Modeling Scenario	Modeled MPP NOx Conc. ($\mu g/m^3$)	Background Conc. ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Significant (Yes/No)
1-Hour	188	MPP in startup	29.0	89.4	118.4	No
1-Hour	188	MPP in normal operation with Duct Burner	3.10	89.4	92.5	No
1-Hour	188	MPP in shutdown	12.35	89.4	101.889.4	No

Table 4-30
Results of NOx Annual Modeling Scenario Modeling Analysis
(NOx Concentrations in μg/m^3)
Five Years of Meteorological Data

Modeling Scenario	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Maximum Modeled NOx Concentration, μg/m^3
MPP: 1,000 hours of duct burner operation with combustion turbine.	0.30	0.31	0.33	0.35	0.26	0.35

Table 4-31
Annual Modeling Analysis Results for NO_X Emissions

Averaging Time	NO_2 NAAQS (μg/m^3)	NO_2 CAAQS (μg/m^3)	Modeling Scenario	MPP NO_2 Conc[a]. (μg/m^3)	Background Conc. (μg/m^3)	Total Impact (μg/m^3)	Significant (Yes/No)
Annual	100	57	MPP: 1,000 hours of duct burner operation with combustion turbine.	0.26	26.10	26.4	No

[a] MPP NO_2 concentration was calculated by multiplying maximum NOx concentration (0.35 μg/m^3) by 0.75.

SECTION 5
PERMIT CONDITIONS

The operator shall comply with the following changes in the existing permit conditions:

<table>
<tr><th colspan="2">Existing Permit Condition</th><th colspan="2">Revised Permit Condition</th></tr>
<tr><td colspan="2">A63.1 The operator shall limit emission from this equipment as follows (Title V Permit Renewal Issued February 16, 2022):</td><td colspan="2">A63.1 The operator shall limit emission from this equipment as follows:</td></tr>
<tr><td>Containment</td><td>Emission Limit</td><td>Containment</td><td>Emission Limit</td></tr>
<tr><td>CO</td><td>Less than or equal to 9,243lbs in any one month</td><td>CO</td><td>Less than or equal to 17,246 lbs in any one month</td></tr>
<tr><td>PM10</td><td>Less than or equal to 9,552 lbs in any one month</td><td>PM10</td><td>Less than or equal to 8,292 lbs in any one month</td></tr>
<tr><td>VOC</td><td>Less than or equal to 3,744 lbs in any one month</td><td>VOC</td><td>Less than or equal to 4,341 lbs in any one month</td></tr>
<tr><td>SOx</td><td>Less than or equal to 1,022 lbs in any one month</td><td>SOx</td><td>Less than or equal to 943 lbs in any one month</td></tr>
<tr><td colspan="2"></td><td colspan="2">Note: The above monthly emission limits are the higher of the monthly emissions estimates for the pollutants provided in Tables 3-23 and 3-24.</td></tr>
<tr><td colspan="2">The operator shall comply with the terms and conditions set forth below:
The operator shall calculate the emission limit(s) by using the monthly fuel use data and the following emission factors: PM10 with duct firing = 7.98 lb/MMscf; PM10 without duct firing = 6.93 lb/MMscf; VOC with duct firing = 2.69 lb/MMscf; VOC without duct firing = 2.69 lb/MMscf; VOC startups = 30 lb/event, VOC shutdown = 17 lb/event; SOx = 0.75 lb/MMscf.
For the purposes of this condition, the limit(s) shall be based on the total combined emissions from equipment D4 (gas Turbine) and D6 (Duct Burner).</td><td colspan="2">The operator shall comply with the terms and conditions set forth below:
The operator shall calculate the emissions by using the monthly fuel use data for normal operation and the following emission factors: PM10 with duct firing = 5.985 lb/MMscf; PM10 without duct firing = 5.198 lb/MMscf; VOC with duct firing = 2.69 lb/MMscf; VOC without duct firing = 2.69 lb/MMscf; VOC startup = 35 lb/event; VOC shutdown = 20 lb/event; SOx = 0.60 lb/MMscf.
Note 1: (a) see Appendix A-16B for PM10 emission factors, (b) see Appendix A-15B and A-16B for VOC emission factors, (c) see Appendix A-11 for VOC emissions during a startup, (d) see Appendix A-12 for VOC emissions during a shutdown, and (e) see Appendix A-14B for SOx emission factor.</td></tr>
</table>

<table>
<tr><td></td><td><u>Note 2: The operator shall calculate VOC emissions during the recommissioning period (tuning operation) by using the monthly fuel use data and the emission factor of 4.57 lb/mmscf. See Appendix A-8 for additional details.</u>
For the purposes of this condition, the limit(s) shall be based on the total combined emissions from equipment D4 (gas Turbine) and D6 (Duct Burner).</td></tr>
<tr><th>Existing Permit Condition</th><th>Revised Permit Condition</th></tr>
<tr><td>A195.2 The 2 PPMV NOX emission limit(s) is averaged over 3 hours at 15 percent oxygen, dry.
The 2.0 ppm NOx emission limit shall not apply during startup and shutdown periods. Startup time shall not exceed 6 hours per startup per day. NOx emissions during the 6 hours after commencement of a startup shall not exceed 440 lbs. Shutdown time shall not exceed 30 minutes per shutdown per day. NOx emissions during the 30 minutes prior to the conclusion of a shutdown shall not exceed 25 lbs. The operator shall limit the number of startups to 5 per month.
[Devices subject to this condition: D4, D6]</td><td>A195.2 The 2 PPMV NOX emission limit(s) is averaged over 1 hour block at 15 percent oxygen, dry.
The 2.0 ppm NOx emission limit shall not apply during recommissioning, startup and shutdown periods. Startup time shall not exceed 6 hours per startup per day. NOx emissions during the 6 hours after commencement of a startup shall not exceed 518 lbs. Shutdown time shall not exceed 30 minutes per shutdown per day. NOx emissions during the 30 minutes prior to the conclusion of a shutdown shall not exceed 29 lbs. The operator shall limit the number of startups to 5 per month.
Note 3: (a) see Appendix A-11 for NOx emissions during a startup and (b) see Appendix A-12 for NOx emissions during a shutdown.
.
[Devices subject to this condition: D4, D6]</td></tr>
<tr><td>A195.3 The 2 PPMV CO emission limit(s) is averaged over 1 hour at 15 percent oxygen, dry.
The 2.0 ppm CO emission limit shall not apply during startup and shutdown periods. Startup time shall not exceed 6 hours per startup per day. CO emissions during the 30 minutes prior to the conclusion of a shutdown shall not exceed 120 lbs. The operator shall limit the number of startups to 5 per month.
[Devices subject to this condition: D4, D6]</td><td>A195.3 The 2 PPMV CO emission limit(s) is averaged over 1 hour at 15 percent oxygen, dry.
The 2.0 ppm CO emission limit shall not apply during recommissioning, startup and shutdown periods. Startup time shall not exceed 6 hours per startup per day. CO emissions during the 30 minutes prior to the conclusion of a shutdown shall not exceed 141 lbs. The operator shall limit the number of startups to 5 per month.
Note 4: see Appendix A-12 for CO emissions during a shutdown.
[Devices subject to this condition: D4, D6]</td></tr>
<tr><td colspan="2">C1.1, C1.2, C1.3 - Note: There will be changes in the fuel use per year, per day and per month after the MPP is upgraded. Fuel use limits in the permit will be provided after the final review of the permit application by the South Coast AQMD.</td></tr>
<tr><td>C1.4 The operator shall limit the operating time to no more than 8322 hour(s) in any one year.</td><td>C1.4 The operator shall limit the operating time to no more than 8508 hour(s) in any one year.</td></tr>
<tr><td>1298.1 This equipment shall not be operated unless the facility holds 132444 pounds of NOx RTCs in its allocation account to offset the annual emission</td><td>1298.1 This equipment shall not be operated unless the facility holds 134581 pounds of NOx RTCs in its allocation account to offset the annual emission</td></tr>
</table>

increase for the first year of operation. ……..In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the start of the operation, the facility holds 132434 pounds of NOx RTCs valid during that compliance year…. [Device subject to this condition: D4]	increase for the first year of operation. ……..In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the start of the operation, the facility holds 134,753 pounds of NOx RTCs valid during that compliance year…. **Note 5: NOx RTC requirements reflect the use of capacity factor of 84.9% for NOx emission calculations.** **Note 6: See Appendix A-29 for NOx RTC requirement for DB+GT combined (138,232 lbs). NOx requirement for the DB will be 4.3 lbs/hr (see Appendix A-15B) x 1,000 hrs/yr x 0.849 (capacity factor = 3,651 lb. Therefore, NOx RTC requirement for GT will be 138,232-3,651 = 134,581 lbs.** [Device subject to this condition: D4]
1298.2 This equipment shall not be operated unless the facility holds 4300 pounds of NOx RTCs in its allocation account to offset the annual emission increase for the first year of operation. ……..In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the start of the operation, the facility holds 4300 pounds of NOx RTCs valid during that compliance year…. [Device subject to this condition: D6]	**1298.2** This equipment shall not be operated unless the facility holds 3651 pounds of NOx RTCs in its allocation account to offset the annual emission increase for the first year of operation. ……..In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the start of the operation, the facility holds 3651 pounds of NOx RTCs valid during that compliance year…. **Note 7: NOx RTC requirement reflects the use of capacity factor of 84.9% for NOx emission calculations.** [Device subject to this condition: D6]
–	**New Condition:** The operator shall limit the fuel usage to no more than 270.675 mmscf during the recommissioning operation. ***Note 8: see Appendix A-8 for fuel use information during the recommissioning operation.*** [Device subject to this condition: D4 gas turbine]

SECTION 6
FEES

The South Coast AQMD Rule 301(c)(1)(A)(i) states that the permit processing fee will be determined in accordance with the schedules set forth in Table Fee Rate-A.

The amount of the fee for permit modification is established under South Coast AQMD Rule 301(m)(4). The following equipment at the Magnolia Power Project will be subject to alteration/modification:

- Gas Turbine No. 1, ID No. D4; and Duct Burner ID No. D6 (1)

The permit processing fees that are applicable to the various schedules are listed in Table Fee Rate-A. FY 2024-25. Summary Permit Fee Rates-Permit Processing, Change of Conditions, Alteration/Modification, page 301-71 of Rule 301, May 3, 2024.

Gas Turbine > 50 MW, other fuel is listed as Schedule G in Table 1B (Permit Fee Rate Schedules for Basic Equipment, page 301-84, May 3, 2024).

The Magnolia Power Project facility operates under a Facility Permit that includes both RECLAIM and Title V. The alteration/modification (for Gas Turbine) will constitute a Facility Permit Amendment. Rule 301(m)(4) (pages 301-51, 301-52, and 301-53, May 3, 2024) which specifies that "at the time of filing an application for a Facility Permit Amendment or Revision, a Facility Permit Amendment/Revision Fee shall be paid and an application for such amendment shall be submitted." The Facility Permit Amendment/Revision Fee is $3,508.09 if the facility is both a RECLAIM and a Title V facility (page 301-99, May 3, 2024).

The equipment to be permitted, the permit action requested and the associated permit fees are presented in Table 6-1. The total permit processing fee for the MPP Upgrade 2024 Project is estimated at $47,177.94. A check for $47,177.94 is included with the permit application.

Table 6-1
Equipment and Associated Fees

Equipment	SCAQMD Category	No. of Identical Equipment	Permitting Requirement	Schedule	Fees		Total Fees
					1st Equipment	Additional Equipment	
Gas Turbine No. 1, ID No. D4; and duct burner, ID No. D6	Gas Turbine, >50 MW, Other Fuel	1	Alteration/Modification	G	$29,113.23	$0.00	$29,113.23
Base Fee							$29,113.23
Expedited Permit Processing - Rule 301(v)(1), Pages 301-60 and 301-61. 50% of Base Fee of $29,113.23							$14.556.62
Facility Permit Amendment, RECLAIM and Title V - Rule 301 (m) (4), Table VII, page 301-99							$3,508.09
Total							**$47,177.94**

APPENDIX A
EMISSION CALCULATION SHEETS, MONTHLY EMISSION LIMIT CALCULATIONS, RTC CALCULATIONS, REFERENCES, AND SUPPORTING DOCUMENTATION

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EMISSION CALCULATION SHEETS, MONTHLY EMISSION LIMIT CALCULATIONS, RTC CALCULATIONS, REFERENCES, AND SUPPORTING DOCUMENTATION

A-40 Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions, Only Gas Turbine (Existing Permit)
Gas Turbine Normal Operation – Hourly Emissions, PM10 and SOX, Reduced EF

A-41 Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions (Existing Permit after Upgrade)
Normal Operation Only Duct Burner (Hourly Emissions), PM10 and SO_X, Reduced EF

A-42 Magnolia Power Plant Permit Modification Project 2024
Development of Criteria Pollutant Emission Factors (Existing Permit)
GT+ DB (Peak) Normal Operation (Hourly Emissions), PM10 and SO_X, Reduced EF

A-43 Magnolia Power Project Permit Modification Project 2024
Hourly Emissions Summary, Current Existing Permit, PM10, SO_X, Reduced EF

A-44 Magnolia Power Project Permit Modification Project 2024
Daily Emissions Based on Current Existing Permit, PM10, SO_X, Reduced EF

A-45 Magnolia Power Project Permit Modification Project 2024
Monthly Emissions Based on Current Existing Permit, PM10, SO_X, Reduced EF

A-46 Magnolia Power Project Permit Modification Project 2024
Annual Emissions Based on Current Existing Permit, PM10, SO_X, Reduced EF

A-50 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 1A

A-51 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 1B+1C

A-52 Magnolia Power Project Upgrade 2024, ..Criteria Pollutant Emissions Commissioning Phase 1D

A-53 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 1E

A-54 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 1F

A-55 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 2A

A-56 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 2B

APPENDIX A
EMISSION CALCULATION SHEETS, MONTHLY EMISSION LIMIT CALCULATIONS, RTC CALCULATIONS, REFERENCES, AND SUPPORTING DOCUMENTATION

A-57 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 3A**

A-58 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 3B**

A-59 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 4A**

A-60 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 4B**

A-61 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 5A**

A-62 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 5B**

A-63 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 5C**

A-64 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 5D**

A-65 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emission Commissioning Phase 5E**

A-66 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 5F**

A-67 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 6A**

A-68 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 6B**

A-69 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 6C**

A-70 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 6D**

A-71 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 7A**

A-72 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 7B**

A-73 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 7C**

A-74 **Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 8A**

APPENDIX A
EMISSION CALCULATION SHEETS, MONTHLY EMISSION LIMIT CALCULATIONS, RTC CALCULATIONS, REFERENCES, AND SUPPORTING DOCUMENTATION

A-75 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 8B, GT Not Operating

A-76 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 9, No GT Operation

A-77 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 10A1

A-78 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 10A2+BCD

A-79 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 10E

A-80 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 10F

A-81 Magnolia Power Project Upgrade 2024, Criteria Pollutant Emissions Commissioning Phase 11

APPENDIX A-1
Calculation of Operating Hours during the Current (2024) and 1st and 2nd Year of Operation (after MPP Upgrades)

Appendix A-1

Calculation of Operating Hours during the Current (2024) and 1st and 2nd Year of Operation (after MPP Upgrades)

Currently Permitted Hours of MPP Operation (2024)

1. Total number of hours in a year	8,760	hrs/yr
2. MPP facility is currently permitted for 8760 x 0.95 hours of operation (Re	8,322	hrs/yr
3. Number of starts per month permitted (Ref. 2)	5	starts/month
4. Number of hours in one start (Ref. 2)	6	hrs/start
5. Number of hours in start in one year (12 x 5 x 6)	360	hrs/yr
6. Number of shutdowns per month permitted (Ref. 2)	5	shut/month
7. Number of hours in one shutdown (Ref. 2)	0.5	hrs/start
8. Number of hours in shutdown in one year (12 x 5 x 0.5)	30	hrs/yr
9. Number of hours of duct burner operation permitted in a month (Ref. 2)	240	hrs/month
10. Number of hours of duct burner operation permitted in a year (Ref.2)	1,000	hrs/yr
11. Number of hours of MPP regular operation without duct burner in a yea	6,932	hrs/yr
= 8,322 - 360 - 30 -1,000 = 6,932 hrs		

Calculation for the first year of Operation after Upgrades

12. MPP requested permitted hours of operation (Ref. 3)	8,508	hrs/yr
13. Total number of days in commissioning (Ref. 4)	11	days
14. Total number of hours of commissioning in the year [(10 x 24) + 12 = 252	252	hrs
15. Non commissioning/tuning hours of MPP during the first year of operati	8,256	hours
16. Number of starts per month permitted (Ref. 2)	5	starts/month
17. Number of hours in one start (Ref. 2)	6	hrs/start
18. Number of hours in start in one year (12 x 5 x 6)	360	hrs/yr
19. Number of shutdowns per month permitted (Ref. 2)	5	shut/month
20. Number of hours in one shutdown (Ref. 2)	0.5	hrs/start
21. Number of hours in shutdown in one year (12 x 5 x 0.5)	30	hrs/yr
22. Number of hours of duct burner operation permitted in a month (Ref.2)	240	hrs/month
23. Number of hours of duct burner operation permitted in a year (Ref.2)	1,000	hrs/yr
24. Number of hours of MPP regular operation without duct burner in a yea	6,866	hrs/yr
=8508-252- 360 - 30 -1,000 = 6,866 hrs		

Calculation for the second year of Operation after Upgrades

25. MPP requested permitted hours of operation (Ref. 3)	8,508	hrs/yr
26. Number of starts per month permitted (Ref. 2)	5	starts/month
27. Number of hours in one start (Ref. 2)	6	hrs/start
28. Number of hours in start in one year (12 x 5 x 6)	360	hrs/yr
29. Number of shutdowns per month permitted (Ref. 2)	5	shut/month
30. Number of hours in one shutdown (Ref. 2)	0.5	hrs/start
31. Number of hours in shutdown in one year (12 x 5 x 0.5)	30	hrs/yr
32. Number of hours of duct burner operation permitted in a month (Ref. 2)	240	hrs/month
33. Number of hours of duct burner operation permitted in a year (Ref.2)	1,000	hrs/yr
34. Number of hours of MPP regular operation without duct burner in a yea	7,118	hrs/yr
= 8,508- 360 - 30 -1,000 = 7,118 hrs		

APPENDIX A-2
GE Test Plan Emission Estimator 20241010 (Ref. 4)

Appendix A-2 GE Test Plan Emission Estimator 20241010 (Ref. 4)

Day of task	Task	Mode / Units	CT Load (MW)	Runtime (hours)	Fuel rate (MMBtu/hr, LHV)	Fuel used for the task (MMBtu, LHV)	Fuel used for the task (MMBtu, HHV)	Stack Emissions per task: NOx (Lb)	CO (lb)	VOC (Lb)	PM10 (lb)	SOx (Lb)	stack exh. temp. (° F)	stack exh. flow rate (acfm)
1	Cold start, steam temp match, M1P mapping	Tot_M1P	10	5	541	2,707	3,004	520	1,966	315	17.8	0	170	514,587
1	M3P Checkout	M3P	25	0.5	793	397	440	64	233	27	1.8	0	180	524,698
1	M62P Checkout	M62P	35	0.5	952	476	528	31	503	72	1.9	0	183	572,472
1	M63P & M5P partload mapping	C_P	50	2	1,156	2,312	2,566	18	39	0	8.9	0	218	695,692
1	M63PA partload mapping	C_PA	90	2	1,663	3,327	3,692	27	5	1	12.4	0	202	942,433
1	Overnight parking point	CP_Overnight	50	14	1,156	16,187	17,964	95	32	3	62.4	0	218	695,692
2	M63PA part/base/peak load mapping	C_PA	90	9	1,663	14,970	16,612	121	24	3	55.7	0	202	942,433
2	Overnight parking point	CP_Overnight	50	15	1,156	17,343	19,247	102	35	3	66.9	0	218	695,692
3	M63PA part/base/peak load mapping	C_PA	90	9	1,663	14,970	16,612	121	24	3	55.7	0	202	942,433
3	Overnight parking point	CP_Overnight	50	15	1,156	17,343	19,247	102	35	3	66.9	0	218	695,692
4	M63P & M5P partload mapping	C_P	50	9	1,156	10,406	11,548	82	173	2	40.1	0	218	679,267
4	Shutdown for fuel strainer removal	SD	0	15	0	0	0	0	0	0	0.0	0	130	0
5	Warm start, steam temp match, M1P mapping	Tot_M1P	10	3	541	1,624	1,803	312	1,180	189	10.7	0	185	526,845
5	M3P mapping	M3P	25	2	793	1,586	1,760	254	932	107	7.1	0	191	533,721
5	M62P mapping	M62P	35	2	952	1,905	2,114	122	2,014	288	7.7	0	202	589,397
5	M63P & M5P partload mapping	C_P	50	2	1,156	2,312	2,566	27	5	1	8.9	0	218	695,692
5	M63PA base/peak load performance testing	C_PA_tune	90	6	1,663	9,980	11,075	81	14	2	37.1	0	202	942,433
5	Overnight parking point	CP_Overnight	50	9	1,156	10,406	11,548	61	21	2	40.1	0	218	695,692
6	M63P & M5P partload mapping	C_P	50	7	1,156	8,094	8,982	64	135	2	31.2	0	218	695,692
6	M63PA part/base/peak load mapping	C_PA	90	2	1,663	3,327	3,692	27	5	1	12.4	0	202	942,433
6	M63PA base/peak load performance testing	C_PA_tune	90	2	1,663	3,327	3,692	27	5	1	12.4	0	202	942,433
6	Overnight parking point	CP_Overnight	50	13	1,156	15,031	16,681	88	30	3	58.0	0	218	695,692
7	M63PA autotune validation and AT loop stability testing	C_PA	90	5	1,663	8,316	9,229	67	13	2	30.9	0	202	942,433
7	M63P & M5P autotune validation and AT loop stability testi	C_P	50	5	1,156	5,781	6,416	45	96	1	22.3	0	218	695,692
7	Overnight parking point	CP_Overnight	50	14	1,156	16,187	17,964	95	32	3	62.4	0	218	695,692
8	M63P/M5P MECL performance testing	C_PA_tune	50	12	1,156	13,875	15,397	82	28	3	53.5	0	218	695,692
8	Shutdown for final software download & water wash	SD	0	12	0	0	0	0	0	0	0.0	0	170	0
9	Offline water wash	WW	0	24	0	0	0	0	0	0	0.0	0	120	0
10	Cold start, steam temp match, final schedule	Tot_M1P	10	2.7	541	1,462	1,622	281	1,062	170	9.6	0	170	514,587
10	Load to base	M3P	25	0.1	793	79	88	13	47	5	0.4	0	180	524,698
10	Load to base	M62P	35	0.1	952	95	106	6	101	14	0.4	0	195	583,161
10	Load to base	C_P	50	0.1	1,156	116	128	2	4	0.0	0.4	0	218	695,692
10	Contractual Performance Testing	C_PA_tune	90	12	1,663	19,959	22,150	108	13	4	74.3	0	202	942,433
10	Overnight parking point	CP_Overnight	50	9	1,156	10,406	11,548	61	21	2	40.1	0	218	695,692
11	Contractual Performance Testing	0	202	12	1,816	21,796	24,188	40	36	4	66.4	0	198	1,116,822

Footnotes

1 SCR catalyst - Typical exhaust gas temperature threshold for activation of NH3 injection is approximately 520-570 °F. The SCR is typically activated 15 minutes after cold start.

2 CO catalyst - No "activation" control exists. Typical temperature threshold for effectiveness is approximately 460 to 500 °F. The CO catalyst is typically effective 12 minutes after cold start.

4 LHV= 917 Btu/scf - low heating value of fuel gas

5 HHV= 1,017 Btu/scf - High heating value of fuel gas

APPENDIX A-3
Rearranged Recommissioning Test Plan (20241010)

Appendix A-3 Rearranged Recommissioning Test Plan (20241010)

						Stack Emissions per task						
Day of task	Task	Mode Units	CT Load MW	Runtime hours	Fuel used for the task MMBtu, HHV	NOx Lb	CO lb	VOC Lb	PM10 lb	SOx Lb	stack exh. temp. ° F	stack exh. flow rate acfm
1A	**Cold start, steam temp match, M1P mapping**	**Tot_M1P**	**10**	**5**	**3,004**	**520**	**1,966**	**315**	**18**	**0**	**170**	**514,587**
1B	M3P Checkout	M3P	25	0.5	440	64	233	27	2.0	0	180	524,698
1C	M62P Checkout	M62P	35	0.5	528	31	503	72	2.0	0	183	572,472
1B+1C			60	1	968	95	736	99	4	0	182	548,585
1D	M63P & M5P partload mapping	C_P	50	2	2,566	18	39	0	9.0	0	218	695,692
1E	M63PA partload mapping	C_PA	90	2	3,692	27	5	1	12.0	0	202	942,433
1F	Overnight parking point	CP_Overnight	50	14	17,964	95	32	3	62.0	0	218	695,692
2A	M63PA part/base/peak load mapping	C_PA	90	9	16,612	121	24	3	56.0	0	202	942,433
2B	Overnight parking point	CP_Overnight	50	15	19,247	102	35	3	67.0	0	218	695,692
3A	M63PA part/base/peak load mapping	C_PA	90	9	16,612	121	24	3	56.0	0	202	942,433
3B	Overnight parking point	CP_Overnight	50	15	19,247	102	35	3	67.0	0	218	695,692
4A	M63P & M5P partload mapping	C_P	50	9	11,548	82	173	2	40.0	0	218	679,267
4B	Shutdown for fuel strainer removal	SD	0	15	0	0	0	0	0.0	0	130	0
5A	Warm start, steam temp match, M1P mapping	Tot_M1P	10	3	1,803	312	1,180	189	11.0	0	185	526,845
5B	M3P mapping	M3P	25	2	1,760	254	932	107	7.0	0	191	533,721
5C	M62P mapping	M62P	35	2	2,114	122	2,014	288	8.0	0	202	589,397
5D	M63P & M5P partload mapping	C_P	50	2	2,566	27	5	1	9.0	0	218	695,692
5E	M63PA base/peak load performance testing	C_PA_tune	90	6	11,075	81	14	2	37.0	0	202	942,433
5F	Overnight parking point	CP_Overnight	50	9	11,548	61	21	2	40.0	0	218	695,692
6A	M63P & M5P partload mapping	C_P	50	7	8,982	64	135	2	31.0	0	218	695,692
6B	M63PA part/base/peak load mapping	C_PA	90	2	3,692	27	5	1	12.0	0	202	942,433
6C	M63PA base/peak load performance testing	C_PA_tune	90	2	3,692	27	5	1	12.0	0	202	942,433
6D	Overnight parking point	CP_Overnight	50	13	16,681	88	30	3	58.0	0	218	695,692
7A	M63PA autotune validation and AT loop stability testing	C_PA	90	5	9,229	67	13	2	31.0	0	202	942,433
7B	M63P & M5P autotune validation and AT loop stability testing	C_P	50	5	6,416	45	96	1	22.0	0	218	695,692
7C	Overnight parking point	CP_Overnight	50	14	17,964	95	32	3	62.0	0	218	695,692
8A	M63P/M5P MECL performance testing	C_PA_tune	50	12	15,397	82	28	3	54.0	0	218	695,692
8B	Shutdown for final software download & water wash	SD	0	12	0	0	0	0	0.0	0	170	0
9A	Offline water wash	WW	0	24	0	0	0	0	0.0	0	120	0
10A	Cold start, steam temp match, final schedule	Tot_M1P	10	2.7	1,622	281	1,062	170	10.0	0	170	514,587
10A1	Cold start, steam temp match, final schedule, (2.0) Hours		10	2	1201	208	787	126	7	0	170	514,587
10A2	Cold start, steam temp match, final schedule, (0.7) Hours		10	0.7	421	73	275	44	3	0	170	514,587
10B	Load to base	M3P	25	0.1	88	13	47	5	0.0	0	180	524,698
10C	Load to base	M62P	35	0.1	106	6	101	14	0.0	0	195	583,161
10D	Load to base	C_P	50	0.1	128	2	4	0.0	0.0	0	218	695,692
10A2+BCD			10	1.0	743	94	427	63	3	0	191	579535
10E	Contractual Performance Testing	C_PA_tune	90	12	22,150	108	13	4	74.0	0	202	942,433
10F	Overnight parking point	CP_Overnight	50	9	11,548	61	21	2	40.0	0	218	695,692
11A	Contractual Performance Testing	0	202	12	24,188	40	36	4	66.0	0	198	1,116,822

APPENDIX A-4

Magnolia Power Project Permit Modification Project 2024 Hourly Emissions, Current Existing Permit

Appendix A-4
Magnolia Power Project Permit Modification Project 2024
Hourly Emissions, Current Existing Permit

Input Data				
		Value	**Units**	**Reference**
a	NOx Emissions from GT, Normal Operation	13.18	lb/hr	Ref. 2
b.	CO Emissions from GT, Normal Operation	8.02	lb/hr	Ref. 2
c.	VOC Emissions from GT, Normal Operation	4.58	lb/hr	Ref. 2
d.	PM10 Emissions from GT, Normal Operation	11.79	lb/hr	Ref. 2
e.	SOx Emissions from GT, Normal Operation	1.28	lb/hr	Ref. 2
f.	NOx Emissions from Duct Burner, Normal Operation	4.30	lb/hr	Ref. 2
g.	CO Emissions from Duct Burner, Normal Operation	2.62	lb/hr	Ref. 2
h.	VOC Emissions from Duct Burner, Normal Operation	1.50	lb/hr	Ref. 2
i.	PM10 Emissions from Duct Burner, Normal Operation	4.43	lb/hr	Ref. 2
j.	SOx Emissions from Duct Burner, Normal Operation	0.42	lb/hr	Ref. 2
k.	NOx Emissions from Gas Turbine and Duct Burner, Peak Operation	17.48	lb/hr	Ref. 2
l.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	10.64	lb/hr	Ref. 2
m.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.08	lb/hr	Ref. 2
n.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	16.22	lb/hr	Ref. 2
o.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.70	lb/hr	Ref. 2
p.	**Startup Duration**	6	hours	Ref. 2
q.	NOx Emissions, Startup	440	lb/event	Ref. 2
r.	CO Emissions, Startup	500	lb/event	Ref. 2
s.	VOC Emissions, Startup	30	lb/event	Ref. 2
t.	PM10 Emissions, Startup	70.74	lb/event	Ref. 2
u.	SOx Emissions, Startup	7.68	lb/event	Ref. 2
v.	**Shutdown Duration**	0.50	hour	Ref. 2
w,	NOx Emissions, Shutdown	25	lb/event	Ref. 2
x.	CO Emissions, Shutdown	120	lb/event	Ref. 2
y.	VOC Emissions, Shutdown	17	lb/event	Ref. 2
z.	PM10 Emissions, Shutdown	5.90	lb/event	Ref. 2
aa.	SOx Emissions, Shutdown	0.64	lb/event	Ref. 2

APPENDIX A-5
Magnolia Power Project Permit Modification Project 2024
Daily Emissions Based on Current Existing Permit

Appendix A-5
Magnolia Power Project Permit Modification Project 2024
Daily Emissions Based on Current Existing Permit

Input Data

		Value	Units	Reference
a	NOx Emissions from GT, Normal Operation	13.18	lb/hr	Ref. 2
b.	CO Emissions from GT, Normal Operation	8.02	lb/hr	Ref. 2
c.	VOC Emissions from GT, Normal Operation	4.58	lb/hr	Ref. 2
d.	PM10 Emissions from GT, Normal Operation	11.79	lb/hr	Ref. 2
e.	SOx Emissions from GT, Normal Operation	1.28	lb/hr	Ref. 2
				Ref. 2
f.	NOx Emissions from Gas Turbine and Duct Burner, Peakin Operation	17.48	lb/hr	Ref. 2
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	10.64	lb/hr	Ref. 2
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.08	lb/hr	Ref. 2
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	16.22	lb/hr	Ref. 2
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.70	lb/hr	Ref. 2
k.	Startup Duration	6	hours	Ref. 2
l.	NOx Emissions, Startup	440	lb/event	Ref. 2
m.	CO Emissions, Startup	500	lb/event	Ref. 2
n.	VOC Emissions, Startup	30	lb/event	Ref. 2
o.	PM10 Emissions, Startup	70.74	lb/event	Ref. 2
p.	SOx Emissions, Startup	7.68	lb/event	Ref. 2
q.	Shutdown Duration	0.50	hour	Ref. 2
r.	NOx Emissions, Shutdown	25	lb/event	Ref. 2
s.	CO Emissions, Shutdown	120	lb/event	Ref. 2
t.	VOC Emissions, Shutdown	17	lb/event	Ref. 2
u.	PM10 Emissions, Shutdown	5.90	lb/event	Ref. 2
v.	SOx Emissions, Shutdown	0.64	lb/event	Ref. 2
w.	Number of hours in a day	24	hrs/day	
x.	Permitted number of hours of duct burner operation in a day	12	hrs/day	Calculated
y.	Maximum number of GT operation without duct burner	12	hrs/day	Calculated
z.	Duration of one start	6	hrs/event	
aa.	Duration of one shutdown	0.5	hrs/event	
bb.	Duration of only GT operation with one start, one shutdown and 12 hours of duct burner operation	5.5	hrs/day	Calculated

Note: The scenario which results in the highest daily emissions is assumed for each pollutant. For NOx, CO and VOC maximum daily emissions are calculated assuming 1 startup, 1 shutdown, 12 hours of normal operation with duct burner and the remaining time in normal operation without duct burner (5.5 hrs). For PM10 and SOx, maximum daily emissions are based on 12 hrs/day normal operation without the duct burner and the remaining operation with the duct burner (12 hrs/day).

Calculation of Maximum Daily Emissions

NOx	= 440 lb/start + 25 lb/shutdown + (12 hrs x 17.48 lb/hr) + (5.5 hrs x 13.18 lb/hr)	**747.3**	**lb/day**
CO	= 500 lb/start + 120 lb/shutdown + (12 hrs x 10.64 lb/hr) + (5.5 hrs x 8.02 lb/hr)	**791.8**	**lb/day**
VOC	= 30 lb/start + 17 lb/shutdown + (12 hrs x 6.08 lb/hr) + (5.5 hrs x 4.58 lb/hr)	**145.2**	**lb/day**
PM10	= (12 hrs x 16.22 lb/hr) + (12 hrs x 11.79 lb/hr)	**336.1**	**lb/day**
SOx	= (12 hrs x 1.7 lb/hr) + (12 hrs x 1.28 lb/hr)	**35.8**	**lb/day**

APPENDIX A-6
Magnolia Power Project Permit Modification Project 2024
Monthly Emissions Based on Current Existing Permit

Appendix A-6
Magnolia Power Project Permit Modification Project 2024
Monthly Emissions Based on Current Existing Permit

Input Data

		Value	Units	Reference
a	NOx Emissions from GT, Normal Operation	13.18	lb/hr	Ref. 2
b.	CO Emissions from GT, Normal Operation	8.02	lb/hr	Ref. 2
c.	VOC Emissions from GT, Normal Operation	4.58	lb/hr	Ref. 2
d.	PM10 Emissions from GT, Normal Operation	11.79	lb/hr	Ref. 2
e.	SOx Emissions from GT, Normal Operation	1.28	lb/hr	Ref. 2
f.	NOx Emissions from Gas Turbine and Duct Burner, Peak Operation	17.48	lb/hr	Ref. 2
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	10.64	lb/hr	Ref. 2
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.08	lb/hr	Ref. 2
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	16.22	lb/hr	Ref. 2
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.70	lb/hr	Ref. 2
k.	Startup Duration	6	hours	Ref. 2
l.	NOx Emissions, Startup	440	lb/event	Ref. 2
m.	CO Emissions, Startup	500	lb/event	Ref. 2
n.	VOC Emissions, Startup	30	lb/event	Ref. 2
o.	PM10 Emissions, Startup	70.74	lb/event	Ref. 2
p.	SOx Emissions, Startup	7.68	lb/event	Ref. 2
q.	Shutdown Duration	0.50	hour	Ref. 2
r.	NOx Emissions, Shutdown	25	lb/event	Ref. 2
s.	CO Emissions, Shutdown	120	lb/event	Ref. 2
t.	VOC Emissions, Shutdown	17	lb/event	Ref. 2
u.	PM10 Emissions, Shutdown	5.90	lb/event	Ref. 2
v.	SOx Emissions, Shutdown	0.64	lb/event	Ref. 2
w.	Number of hours in a month	720	hrs/month	
x.	Number of starts in a month	5	starts/month	Ref. 2
y.	Duration of one start	6	hrs/event	Ref. 2
z.	Number of shutdowns per month	5	shutdowns/month	Ref. 2
aa.	Duration of one shutdown	0.5	hrs/event	Ref. 2
bb.	Number of hours in five startups	30	hrs/month	Calculated
cc.	Number of hours in five shutdowns	2.5	hrs/month	Calculated
dd.	Number of hours of normal operation with duct burner	240	hrs/month	Ref. 2
ee.	Maximum number of GT operation without duct burner	480	hrs/month	Calculated
ff.	Duration of only GT operation with five start, five shutdown, and 240 hours of duct burner operation	447.5	hrs/month	Calculated

Note: The scenario which results in the highest monthly emissions is assumed for each pollutant. For CO and VOC maximum monthly emissions are calculated with 5 startup, 5 shutdown, 240 hours of normal operation with duct burner, and the remaining time in normal operation without duct burner (447.5 hrs). For PM10 and SOx, monthly emissions are based on 240 hrs/month normal operation with the duct burner and the remaining operation without the duct burner (480 hours).

Calculation of Maximum Monthly Emissions - Duct Burner Operation 240 Hours in the Month

CO	= (500 lb x 5 starts) + (120 lb x 5 shutdowns)+ (240 hrs x 10.64 lb/hr) + (447.5 hrs x 8.02 lb/hr)	**9,243**	**lb/month**
VOC	= (30 lb x 5 starts) + (17 lb x 5 shutdowns)+ (447.5 hrs x 4.58 lb/hr) + (240 hrs x 6.08 lb/hr)	**3,744**	**lb/month**
PM10	= (240 hrs x 16.22 lb/hr) + (480 hrs x 11.79 lb/hr)	**9,552**	**lb/month**
SOx	= (240 hrs x 1.7 lb/hr) + (480 hrs x 1.28 lb/hr)	**1,022**	**lb/month**

APPENDIX A-7
Magnolia Power Project Permit Modification Project 2024
Annual Emissions Based on Current Existing Permit

Appendix A-7
Magnolia Power Project Permit Modification Project 2024
Annual Emissions Based on Current Existing Permit

Input Data				
a	NOx Emissions from GT, Normal Operation	13.18	lb/hr	Ref. 2
b.	CO Emissions from GT, Normal Operation	8.02	lb/hr	Ref. 2
c.	VOC Emissions from GT, Normal Operation	4.58	lb/hr	Ref. 2
d.	PM10 Emissions from GT, Normal Operation	11.79	lb/hr	Ref. 2
e.	SOx Emissions from GT, Normal Operation	1.28	lb/hr	Ref. 2
f.	**NOx Emissions from Gas Turbine and Duct Burner, Peak Operation**	17.48	lb/hr	Ref. 2
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	10.64	lb/hr	Ref. 2
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.08	lb/hr	Ref. 2
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	16.22	lb/hr	Ref. 2
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.70	lb/hr	Ref. 2
k.	**Startup Duration**	6	hours	Ref. 2
l.	NOx Emissions, Startup	440	lb/event	Ref. 2
m.	CO Emissions, Startup	500	lb/event	Ref. 2
n.	VOC Emissions, Startup	30	lb/event	Ref. 2
o.	PM10 Emissions, Startup	70.74	lb/event	Ref. 2
p.	SOx Emissions, Startup	7.68	lb/event	Ref. 2
q.	**Shutdown Duration**	0.50	hour	Ref. 2
r.	NOx Emissions, Shutdown	25	lb/event	Ref. 2
s.	CO Emissions, Shutdown	120	lb/event	Ref. 2
t.	VOC Emissions, Shutdown	17	lb/event	Ref. 2
u.	PM10 Emissions, Shutdown	5.90	lb/event	Ref. 2
v.	SOx Emissions, Shutdown	0.64	lb/event	Ref. 2
w.	**Number of hours in a year**	8,760	hrs/year	
x.	Capacity Factor	95	percent	Ref. 2
y.	Hours per year in operation	8,322	hrs/year	Calculated
z.	Number of starts per month	5	starts/month	Ref. 2
aa.	Number of starts in a year	60	starts/year	Calculated
bb.	Duration of one start	6	hrs/event	Ref. 2
cc.	Number of shutdowns per month	5	shutdowns/month	Ref. 2
dd.	Number of shutdowns per year	60	shutdowns/year	Calculated
ee.	Duration of one shutdown	0.5	hrs/event	Ref. 2
ff.	Number of hours in 60 startups (annual)	360	hrs/year	Calculated
gg.	Number of hours in 60 shutdowns (annual)	30	hrs/year	Calculated
hh.	Number of hours of normal operation with duct burner	1,000	hrs/year	Ref. 2
ii.	Hours in normal opeartion without DB, 60 start & 60 shutdown = (8322 - 1000 -360 - 30)	6,932	hrs/year	Calculated
jj.	Maximum number of GT operation without duct burner = (8322 - 1000)	7,322	hrs/year	Calculated

Note: The scenario which results in the highest annual emissions is assumed for each pollutant. For NOx, CO and VOC maximum annual emissions are calculated assuming 60 startup, 60 shutdown, 1,000 hours of normal operation with duct burner and the remaining time in normal operation without duct burner (6,932 hrs). For PM10 and SOx, annual emissions are based on 1,000 hrs/month normal operation with the duct burner and the remaining operation without the duct burner (7,322 hours).

Calculation of Annual Emissions for NOx, CO and VOC			
NOx	= (440 lb x 60 starts) + (25 lb x 60 shutdowns)+ (1000 hrs x 17.48 lb/hr) + (6932 hrs x 13.18 lb/hr)	136,744	lb/year
CO	= (500 lb x 60 starts) + (120 lb x 60 shutdowns)+ (1000 hrs x 10.64 lb/hr) + (6932 hrs x 8.02 lb/hr)	103,435	lb/year
VOC	= (30 lb x 60 starts) + (17 lb x 60 shutdowns)+ (1000 hrs x 6.08 lb/hr) + (6932 hrs x 4.58 lb/hr)	40,649	lb/year
Calculation of Annual Emissions for PM10, SOx			
PM10	= (1000 hrs x 16.22 lb/hr) + (7322 hrs x 11.79 lb/hr)	102,546	lb/year
SOx	= (1000 hrs x 1.7 lb/hr) + (7322 hrs x 1.28 lb/hr)	11,072	lb/year

APPENDIX A-8
Emissions during full Recommissioning Operation
(Estimator Data 20241010)

Appendix A-8 Emissions during full Recommissioning Operation (Estimator Data 20241010)

Day of task	Task	Runtime hours	Fuel Used MMBtu, HHV	NOx Lb	CO lb	VOC Lb	PM10 lb	SOx Lb
				Stack Emissions per task				
1	Cold start, steam temp match, M1P mapping	5	3,004	520	1,966	315	18	1.72
1	M3P Checkout	0.5	440	64	233	27	2	0.25
1	M62P Checkout	0.5	528	31	503	72	2	0.30
1	M63P & M5P partload mapping	2	2,566	18	39	0	9	1.47
1	M63PA partload mapping	2	3,692	27	5	1	12	2.11
1	Overnight parking point	14	17,964	95	32	3	62	10.27
2	M63PA part/base/peak load mapping	9	16,612	121	24	3	56	9.49
2	Overnight parking point	15	19,247	102	35	3	67	11.00
3	M63PA part/base/peak load mapping	9	16,612	121	24	3	56	9.49
3	Overnight parking point	15	19,247	102	35	3	67	11.00
4	M63P & M5P partload mapping	9	11,548	82	173	2	40	6.60
4	Shutdown for fuel strainer removal	15	0	0	0	0	0	0.00
5	Warm start, steam temp match, M1P mapping	3	1,803	312	1,180	189	11	1.03
5	M3P mapping	2	1,760	254	932	107	7	1.01
5	M62P mapping	2	2,114	122	2,014	288	8	1.21
5	M63P & M5P partload mapping	2	2,566	27	5	1	9	1.47
5	M63PA base/peak load performance testing	6	11,075	81	14	2	37	6.33
5	Overnight parking point	9	11,548	61	21	2	40	6.60
6	M63P & M5P partload mapping	7	8,982	64	135	2	31	5.13
6	M63PA part/base/peak load mapping	2	3,692	27	5	1	12	2.11
6	M63PA base/peak load performance testing	2	3,692	27	5	1	12	2.11
6	Overnight parking point	13	16,681	88	30	3	58	9.53
7	M63PA autotune validation and AT loop stability	5	9,229	67	13	2	31	5.27
7	M63P & M5P autotune validation and AT loop st	5	6,416	45	96	1	22	3.67
7	Overnight parking point	14	17,964	95	32	3	62	10.27
8	M63P/M5P MECL performance testing	12	15,397	82	28	3	54	8.80
8	Shutdown for final software download & water w	12	0	0	0	0	0	0.00
9	Offline water wash	24	0	0	0	0	0	0.00
10	Cold start, steam temp match, final schedule	2.7	1,622	281	1,062	170	10	0.93
10	Load to base	0.1	88	13	47	5	0	0.05
10	Load to base	0.1	106	6	101	14	0	0.06
10	Load to base	0.1	128	2	4	0	0	0.07
10	Contractual Performance Testing	12	22,150	108	13	4	74	12.66
10	Overnight parking point	9	11,548	61	21	2	40	6.60
11	Contractual Performance Testing	12	24,188	40	36	4	66	13.82
All	Total runtime, fuel used, emissions for Recommissionin	252	284,209	3,146	8,863	1,236	975	162
	Fuel Used, MMscf (MMBtu/1050) and Emissions in lb/MMscf		270.675	11.62	32.74	4.57	3.60	0.60

Note:
SOx emissions are estimated using EF of 0.60 lb/MMsc (Ref 5).

APPENDIX A-9
Daily Emissions during Recommissioning Operation
(Test Plan 20241010)

Appendix A-9 Daily Emissions during Recommissioning Operation (Test Plan 20241010)

Day of task	Task	Runtime	Fuel Used	Stack Emissions per task				
				NOx	CO	VOC	PM10	SOx
		hours	MMBtu, HHV	Lb	lb	Lb	lb	Lb
1	Cold start, steam temp match, M1P mapping	5	3,004	520	1,966	315	18	1.72
1	M3P Checkout	0.5	440	64	233	27	2	0.25
1	M62P Checkout	0.5	528	31	503	72	2	0.30
1	M63P & M5P partload mapping	2	2,566	18	39	0	9	1.47
1	M63PA partload mapping	2	3,692	27	5	1	12	2.11
1	Overnight parking point	14	17,964	95	32	3	62	10.27
Day 1	Total Emissions	24	-	755	2,778	418	105	16.12
2	M63PA part/base/peak load mapping	9	16,612	121	24	3	56	9.49
2	Overnight parking point	15	19,247	102	35	3	67	11.00
Day 2	Total Emissions	24	-	223	59	6	123	20.49
3	M63PA part/base/peak load mapping	9	16,612	121	24	3	56	9.49
3	Overnight parking point	15	19,247	102	35	3	67	11.00
Day 3	Total Emissions	24	-	223	59	6	123	20.49
4	M63P & M5P partload mapping	9	11,548	82	173	2	40	6.60
4	Shutdown for fuel strainer removal	15	0	0	0	0	0	0.00
Day 4	Total Emissions	24	-	82	173	2	40	6.60
5	Warm start, steam temp match, M1P mapping	3	1,803	312	1,180	189	11	1.03
5	M3P mapping	2	1,760	254	932	107	7	1.01
5	M62P mapping	2	2,114	122	2,014	288	8	1.21
5	M63P & M5P partload mapping	2	2,566	27	5	1	9	1.47
5	M63PA base/peak load performance testing	6	11,075	81	14	2	37	6.33
5	Overnight parking point	9	11,548	61	21	2	40	6.60
Day 5	Total Emissions	24	-	857	4,166	589	112	17.65
6	M63P & M5P partload mapping	7	8,982	64	135	2	31	5.13
6	M63PA part/base/peak load mapping	2	3,692	27	5	1	12	2.11
6	M63PA base/peak load performance testing	2	3,692	27	5	1	12	2.11
6	Overnight parking point	13	16,681	88	30	3	58	9.53
Day 6	Total Emissions		-	206	175	7	113	18.88
7	M63PA autotune validation and AT loop stability testing	5	9,229	67	13	2	31	5.27
7	M63P & M5P autotune validation and AT loop stability t	5	6,416	45	96	1	22	3.67
7	Overnight parking point	14	17,964	95	32	3	62	10.27
Day 7	Total Emissions		-	207	141	6	115	19.21
8	M63P/M5P MECL performance testing	12	15,397	82	28	3	54	8.80
8	Shutdown for final software download & water wash	12	0	0	0	0	0	0.00
Day 8	Total Emissions	24	-	82	28	3	54	8.80
Day 9	Offline water wash	24	0	0	0	0	0	0.00
10	Cold start, steam temp match, final schedule	2.7	1,622	281	1,062	170	10	0.93
10	Load to base	0.1	88	13	47	5	0	0.05
10	Load to base	0.1	106	6	101	14	0	0.06
10	Load to base	0.1	128	2	4	0	0	0.07
10	Contractual Performance Testing	12	22,150	108	13	4	74	12.66
10	Overnight parking point	9	11,548	61	21	2	40	6.60
Day 10	Total Emissions	24	-	471	1,248	195	124	20.37
11	Contractual Performance Testing	12	24,188	40	36	4	66	13.82
11	Normal Operation with Duct Burner	12		238	145	83	165	18.36
Day 11	Total Emissions	24	-	278	181	87	231	32.18
		MAX		857	4,166	589	231	32

APPENDIX A-10
Emissions during Rearranged Recommissioning Operation
(Test Plan 20241010)

Appendix A-10 Emissioins during Rearranged Recommissioing Operation (Test Plan 20241010)

						Stack Emissions per task						
Day of task	Task	Mode Units	CT Load MW	Runtime hours	Fuel used for the task MMBtu, HHV	NOx Lb	CO lb	VOC Lb	PM10 lb	SOx Lb	stack exh. temp. ° F	stack exh. flow rate acfm
1A	Cold start, steam temp match, M1P mapping	Tot_M1P	10	5	3,004	520	1966	315	18	1.72	170	514,587
1B	M3P Checkout	M3P	25	0.5	440	64	233	27	2	0.25	180	524,698
1C	M62P Checkout	M62P	35	0.5	528	31	503	72	2	0.30	183	572,472
1B+1C			-	1	968	95	736	99	4	0.55	182	548,585
1D	M63P & M5P partload mapping	C_P	50	2	2,566	18	39	0	9	1.47	218	695,692
1E	M63PA partload mapping	C_PA	90	2	3,692	27	5	1	12	2.11	202	942,433
1F	Overnight parking point	CP_Overnight	50	14	17,964	95	32	3	62	10.27	218	695,692
2A	M63PA part/base/peak load mapping	C_PA	90	9	16,612	121	24	3	56	9.49	202	942,433
2B	Overnight parking point	CP_Overnight	50	15	19,247	102	35	3	67	11.00	218	695,692
3A	M63PA part/base/peak load mapping	C_PA	90	9	16,612	121	24	3	56	9.49	202	942,433
3B	Overnight parking point	CP_Overnight	50	15	19,247	102	35	3	67	11.00	218	695,692
4A	M63P & M5P partload mapping	C_P	50	9	11,548	82	173	2	40	6.60	218	679,267
4B	Shutdown for fuel strainer removal	SD	0	15	0	0	0	0	0	0.00	130	0
5A	Warm start, steam temp match, M1P mapping	Tot_M1P	10	3	1,803	312	1180	189	11	1.03	185	526,845
5B	M3P mapping	M3P	25	2	1,760	254	932	107	7	1.01	191	533,721
5C	M62P mapping	M62P	35	2	2,114	122	2014	288	8	1.21	202	589,397
5D	M63P & M5P partload mapping	C_P	50	2	2,566	27	5	1	9	1.47	218	695,692
5E	M63PA base/peak load performance testing	C_PA_tune	90	6	11,075	81	14	2	37	6.33	202	942,433
5F	Overnight parking point	CP_Overnight	50	9	11,548	61	21	2	40	6.60	218	695,692
6A	M63P & M5P partload mapping	C_P	50	7	8,982	64	135	2	31	5.13	218	695,692
6B	M63PA part/base/peak load mapping	C_PA	90	2	3,692	27	5	1	12	2.11	202	942,433
6C	M63PA base/peak load performance testing	C_PA_tune	90	2	3,692	27	5	1	12	2.11	202	942,433
6D	Overnight parking point	CP_Overnight	50	13	16,681	88	30	3	58	9.53	218	695,692
7A	M63PA autotune validation and AT loop stability testing	C_PA	90	5	9,229	67	13	2	31	5.27	202	942,433
7B	M63P & M5P autotune validation and AT loop stability testin	C_P	50	5	6,416	45	96	1	22	3.67	218	695,692
7C	Overnight parking point	CP_Overnight	50	14	17,964	95	32	3	62	10.27	218	695,692
8A	M63P/M5P MECL performance testing	C_PA_tune	50	12	15,397	82	28	3	54	8.80	218	695,692
8B	Shutdown for final software download & water wash	SD	0	12	0	0	0	0	0	0.00	170	0
9A	Offline water wash	WW	0	24	0	0	0	0	0	0.00	120	0
10A	Cold start, steam temp match, final schedule	Tot_M1P	10	2.7	1,622	281	1062	170	10	0.93	170	514,587
10A1	Cold start, steam temp match, final schedule, (2.0) Hours		10	2	1201	208	787	126	7	0.69	170	514,587
10A2	Cold start, steam temp match, final schedule, (0.7) Hours		10	0.7	421	73	275	44	3	0.24	170	514,587
10B	Load to base	M3P	25	0.1	88	13	47	5	0	0.05	180	524,698
10C	Load to base	M62P	35	0.1	106	6	101	14	0	0.06	195	583,161
10D	Load to base	C_P	50	0.1	128	2	4	0	0	0.07	218	695,692
10A2+BCD			-	1.0	743	94	427	63	3	0.42	191	579,535
10E	Contractual Performance Testing	C_PA_tune	90	12	22,150	108	13	4	74	12.66	202	942,433
10F	Overnight parking point	CP_Overnight	50	9	11,548	61	21	2	40	6.60	218	695,692
11A	Contractual Performance Testing	0	202	12	24,188	40	36	4	66	13.82	198	1,116,822

Note: SOx emissions are estimated using EF of 0.60 lb/MMscf (Ref. 5). Fuel in MMscf = Fuel in MMBtu/1050

APPENDIX A-11
Magnolia Power Plant Permit Modification Project 2024
Development Of Criteria Pollutant Emission Factors
Calculation of Startup Emissions after the Upgrade of MPP

Appendix A-11
Magnolia Power Plant Permit Modification Project 2024
Development Of Criteria Pollutant Emission Factors
Calculation of Startup Emissions after the Upgrade of MPP

Natural Gas Used by the Combustion Turbine

Input Data

		Value	Units	Reference
a	GT Load	Startup	-	-
b.	Heat Input to existing GT, HHV	1787	MMBtu/hr HHV	Ref. 4
c.	**Heat Input to upgraded GT, HHV**	**2103**	MMBtu/hr HHV	Ref. 4
d.	PM10 emission during a start, existing GT	70.74	lb/startup event	Ref. 2
e.	SOx emission during a start, existing GT	7.68	lb/startup event	Ref. 2
f.	NOx emission during a start, existing GT	440	lb/startup event	Ref. 2
g.	CO emissions during a start, existing GT	500	lb/startup event	Ref. 2
h.	VOC emissions during a start, existing GT	30	lb/startup event	Ref. 2
i.	**Startup duration**	6	hours	Ref. 2
j.	PM10 emission during a start, upgraded GT (70.74 x 2103/1787)	83.25	lb/startup event	Ref. 6
k.	SOx emission during a start, upgraded GT (7.68 x 2103/1787)	9.04	lb/startup event	Ref. 6
l.	NOx emission during a start, upgraded GT (440 x 2103/1787)	518	lb/startup event	Ref. 6
m.	CO emissions during a start, upgraded GT (500 x 2103/1787)	588	lb/startup event	Ref. 6
n.	VOC emissions during a start, upgraded GT (30 x 2103/1787)	35	lb/startup event	Ref. 6
o.	Stack Height	45.70	meters	2
p.	Stack Diameter	5.80	meters	2
q.	Stack Base Elevation	560	ft	Sec 2
r.	Stack Exhaust Temperature	361.6	K	2
s.	Stack Exit Velocity	7.2	m/s	2

Criteria Species Name	Startup Emissions Upgraded MPP lb/startup event	Startup Emissions grams/sec
Oxides of Nitrogen (NOx)	518	10.878
Carbon Monoxide (CO)	588	12.348
Volatile Organic Compounds (VOC)	35	0.735
Particulate Matter (PM10)	83.25	1.748
Sulfur Oxides (SO_2)	9.04	0.190

Emission (g/sec) = Emission (lb/startup event) x 453.592/(6 x 3600)

APPENDIX A-12
Magnolia Power Plant Permit Modification Project 2024
Development Of Criteria Pollutant Emission Factors
Calculation of Shutdown Emissions after the Upgrade of MPP

Appendix A-12
Magnolia Power Plant Permit Modification Project 2024
Development Of Criteria Pollutant Emission Factors
Calculation of Shutdown Emissions after the Upgrade of MPP

Natural Gas Used by the Combustion Turbine

Input Data

		Value	Units	Reference
a	GT Load	Shutdown	-	-
b.	Heat Input to existing GT, HHV	1787	MMBtu/hr HHV	Ref. 4
	Heat Input to upgraded GT, HHV	2103	MMBtu/hr HHV	Ref. 4
c.	PM10 emission during a shutdown, existing GT	5.90	lb/shutdownup event	Ref. 2
d.	SOx emission during a shutdown, existing GT	0.64	lb/shutdownup event	Ref. 2
e.	NOx emission during a shutdown, existing GT	25	lb/shutdownup event	Ref. 2
f.	CO emissions during a shutdown, existing GT	120	lb/shutdownup event	Ref. 2
g.	VOC emissions during a shutdown, existing GT	17	lb/shutdownup event	Ref. 2
h.	Shutdownup duration	0.5	hour	Ref. 2
c.	PM10 emission during a shutdown, upgraded GT (5.90 x 2103/1787)	6.94	lb/shutdownup event	Ref. 6
d.	SOx emission during a shutdown, upgraded GT (0.64 x 2103/1787)	0.75	lb/shutdownup event	Ref. 6
e.	NOx emission during a shutdown, upgraded GT (25 x 2103/1787)	29	lb/shutdownup event	Ref. 6
f.	CO emissions during a shutdown, upgraded GT (120 x 2103/1787)	141	lb/shutdownup event	Ref. 6
g.	VOC emissions during a shutdown, upgraded GT (17 x 2103/1787)	20	lb/shutdownup event	Ref. 6
i.	Stack Height	45.70	meters	2
j.	Stack Diameter	5.80	meters	2
k.	Stack Base Elevation	560	ft	Sec 2
l.	Stack Exhaust Temperature	361.6	K	2
m.	Stack Exit Velocity	7.2	m/s	2

Criteria Species Name	Shutdown Emissions Upgraded MPP lb/shutdown event	
Oxides of Nitrogen (NOx)	29.00	
Carbon Monoxide (CO)	141.00	
Volatile Organic Compounds (VOC	20.00	
Particulate Matter Ten Microns and	6.94	
Sulfur Oxides (SO_2)	0.75	

APPENDIX A-13
Magnolia Power Plant Permit Modification Project 2024
Development Of Criteria Pollutant Emission Factors
1-hr (Shut + Normal Emissions with DB) of the Combustion Turbine for Modeling Analysis

Appendix A-13
Magnolia Power Plant Permit Modification Project 2024
Development Of Criteria Pollutant Emission Factors
1-hr (Shut + Normal Emissions with DB) of the Combustion Turbine for Modeling Analysis

Natural Gas Used by the Combustion Turbine

Input Data

		Value	Units	Reference
a	NOx shutdown emissions (upgraded GT), 0.5 hr	29.00	lb/0.5-hr	App A-12
b.	CO shutdown emissions (upgraded GT), 0.5 hr	141.00	lb/0.5-hr	App A-12
c.	VOC shutdown emissions (upgraded GT), 0.5 hr	20.00	lb/0.5-hr	App A-12
d.	PM10 shutdown emissions (upgraded GT), 0.5 hr	6.94	lb/0.5-hr	App A-12
e.	SO2 shutdown emissions (upgraded GT), 0.5 hr	0.75	lb/0.5-hr	App A-12
f.	NOx emission (upgraded GT) + DB during normal operation, 1-hr	19.80	lb/hr	App A-6
g.	CO emission (upgraded GT) + DB during normal operation, 1-hr	12.05	lb/hr	App A-6
h.	VOC emission (upgraded GT) + DB during normal operation, 1-hr	6.89	lb/hr	App A-6
j.	PM10 emission (upgraded GT) + DB during normal operation, 1-hr	13.73	lb/hr	App A-6
k.	SO2 emission (upgraded GT) + DB during normal operation, 1-hr	1.53	lb/hr	App A-6
l.	NOx emission (shut+normal), upgraded GT [29.00 + (19.80/2)]	38.90	lb/hr	Calculated
m.	CO emission (shut+normal), upgraded GT [141.00 + 12.05/2)]	147.03	lb/hr	Calculated
n.	VOC emission (shut+normal), upgraded GT [20.00 + (6.89/2)]	23.45	lb/hr	Calculated
o.	PM10 emission (shut+normal), upgraded GT [6.94 + (13.73/2)]	13.81	lb/hr	Calculated
p.	SO2 emission (shut+normal), upgraded GT 0.75 + (1.53/2)]	1.52	lb/hr	Calculated
q.	Stack Height	45.70	meters	2
r.	Stack Diameter	5.80	meters	2
s.	Stack Base Elevation	560	ft	Sec 2
t.	Stack Exhaust Temperature	361.6	K	2
u.	Stack Exit Velocity	7.2	m/s	2

Criteria Species Name	Shut + Normal lb/hr	Shut + Normal grams/sec
Oxides of Nitrogen (NOx)	38.90	4.901
Carbon Monoxide (CO)	147.03	18.525
Volatile Organic Compounds (VOC)	23.45	2.955
Particulate Matter (PM10)	13.81	1.740
Sulfur Oxides (SO_2)	1.52	0.192

Emission (g/sec) = Emission (lb/shut+norm event) x 453.592/ 3600)

APPENDIX A-14B
Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions, Only Gas Turbine (after Upgrade)
Gas Turbine Normal Operation – Hourly Emissions, Reduced EF

Appendix A-14B
Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions, Only Gas Turbine (after Upgrade)
Gas Turbine Normal Operation - Hourly Emissions, Reduced EF

Natural Gas Used by the Combustion Turbine

Device ID Number:	Upgraded GE 7FA
No. of Devices:	One Gas Turbine
Process Equipment Description:	GE 7FA with DLN
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction, CO Catalyst, and Dry-Low-NOx Combustor

Parameter Symbols/Names	Values	
Fuel burned per hour (one GT)	2.003	MMscf/hr
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Process Operation Schedule	24	hrs/day

Criteria Species Name	Hourly Max Emissions (lb/hr)
Oxides of Nitrogen (NOx)	15.51
Carbon Monoxide (CO)	9.44
Volatile Organic Compounds (VOC)	5.39
Ammonia (NH_3)	14.33
Particulate Matter Ten Microns and Less (PM10)	10.41
Sulfur Oxides (SO_2)	1.20

Criteria Species Name	Hourly Max Emissions (grams/sec)
NOx	1.954
CO	1.189
VOC	0.679
NH_3	1.806
PM_{10}	1.312
SO_2	0.151

Emission (g/sec) = Emission (lb/hr) x 453.592/3600

Appendix A-14B
Magnolia Power Plant Permit Upgrade Project 2024
Development Of Criteria Pollutant Emission Factors (after Upgrade)
Gas Turbine Normal Operation - Hourly Emissions, Reduced EF

Natural Gas Used by the Combustion Turbine

Input Data

		Value	Units	Reference
a	GT Load	100	percent	4
b.	Heat Input to GT, HHV	2103	MMBtu/hr HHV	4
c.	NOx Concentration	2.00	ppmvd @ 15% O_2	2
d.	CO Concentration	2.00	ppmvd @ 15% O_2	2
e.	VOC Concentration	2.00	ppmvd @ 15% O_2	2
f.	NH_3 Slip	5.00	ppmvd @ 15% O_2	2
g1	Original PM10 Emission Factor	0.0066	lb/MMBtu	2
g2	Reduced PM10 Emission Factor =[0.0066 - (0.25 x 0.0066)] = 0.00495	0.00495	lb/MMBtu	see Sec 3
h.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
i.	Volume of gas at STP for 1 lb-mol of gas	385	scf/lb-mol	2
j.	Hours of operation	24	hrs/day	Maximum
k.	Annual Number of Hours of Operation	8,760	hrs/yr	Maximum
l.	Reduced SOx Emission Factor	0.60	lb/MMscf	5

Calculate Maximum Hourly Fuel Consumption Rate (MMscf/hr) in Terms of HHV

Maximum Hourly Fuel Consumption Rate (MMscf/hr) = Heat Input (MMBtu/hr HHV) / NG Heating Value (Btu/scf HHV)		
Maximum Hourly Fuel Consumption Rate (MMscf/hr) = 2103 (MMBtu/hr) / 1050 (Btu/scf)	2.003	MMscf/hr

Calculate SOx Emission Rate

SOx Emission Rate = 0.6 lb/MMscf x 2.003 MMscf/hr	1.20	lb/hr

Calculate PM10 Emission Rate

PM10 Emission Rate = 0.00495 lb/MMBtu x 2103 MMBtu/hr	10.41	lb/hr

Appendix A-14B
Magnolia Power Plant Permit Upgrade Project 2024
Development Of Criteria Pollutant Emission Factors (after Upgrade)
Gas Turbine Normal Operation - Hourly Emissions, Reduced EF

Natural Gas Used by the Combustion Turbine

Calculate GT Exhaust Rate			
GT Calculated Exhaust Rate			
GT Exhaust Rate, Dry (MMScf/hr) = GT Rated heat input (MMBtu/hr) x 8710 x [20.9/(20.9-15.0)]/1000000		64.89	MMscf/hr
GT Exhaust Rate, Dry (MMScf/hr) = 2103 MMBtu/hr x 8710 x [20.9/(20.9-15.0)]/1000000			
Calculation of Emission Factors for NOx, CO, VOC and NH_3			
Molecular Weight of NOx (NO2)		46	lb/lb-mole
Molecular Weight of CO		28	lb/lb-mole
Molecular Weight of VOC (CH4)		16	lb/lb-mole
Molecular Weight of NH3		17	lb/lb-mole
NOx Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack NOx Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
NOx Hourly Emission at 15% O2, dry = 64.89 x 2 x 46/385	lb/hr	15.51	lb/hr
NOx Hourly Emission at 15% O2, dry = 15.51 lb/hr/2.003 MMscf/hr	lb/MMscf	7.74	lb/MMscf
CO Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack CO Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
CO Hourly Emission at 15% O2, dry = 64.89 x 2 x 28/385	lb/hr	9.44	lb/hr
CO Hourly Emission at 15% O2, dry = 9.44 lb/hr/2.003 MMscf/hr	lb/MMscf	4.71	lb/MMscf
VOC Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack VOC Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
VOC Hourly Emission at 15% O2, dry = 64.89 x 2 x 16/385	lb/hr	5.39	lb/hr
VOC Hourly Emission at 15% O2, dry = 5.39 lb/hr/2.003 MMscf/hr	lb/MMscf	2.69	lb/MMscf
NH_3 Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack NH3 Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
NH3 Hourly Emission at 15% O2, dry = 64.89 x 5 x 17/385	lb/hr	14.33	lb/hr
NH3 Hourly Emission at 15% O2, dry = 14.33 lb/hr/2.003 MMscf/hr	lb/MMscf	7.15	lb/MMscf

APPENDIX A-15B
Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions (after Upgrade)
Normal Operation Only Duct Burner (Hourly Emissions), Reduced EF

Appendix 15B
Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions (after Upgrade)
Normal Operation Only Duct Burner (Hourly Emissions), Reduced EF

Natural Gas Used by the Combustion Turbine

Device ID Number: Upgraded GE 7FA
No. of Devices: One Gas Turbine

Process Equipment Description: GE 7FA with DLN
Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction, CO Catalyst, and Dry-Low-NOx Combustor

Parameter Symbols/Names	Values	
Fuel burned per hour (one GT)	0.555	MMscf/hr
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Process Operation Schedule	24	hrs/day

Criteria Species Name	Hourly Max Emissions (lb/hr)
Oxides of Nitrogen (NOx)	4.30
Carbon Monoxide (CO)	2.62
Volatile Organic Compounds (VOC)	1.50
Ammonia (NH_3)	3.97
Particulate Matter Ten Microns and Less (PM10)	3.32
Sulfur Oxides (SO_2)	0.33

Criteria Species Name	Hourly Max Emissions (grams/sec)
NOx	0.542
CO	0.330
VOC	0.189
NH_3	0.500
PM_{10}	0.418
SO_2	0.042

Emission (g/sec) = Emission (lb/hr) x 453.592/3600

Appendix 15B
Magnolia Power Plant Permit Upgrade Project 2024
Development Of Criteria Pollutant Emission Factors (after Upgrade)
Normal Operation Only Duct Burner (Hourly Emissions), Reduced EF

Natural Gas Used by the Combustion Turbine

Input Data

		Value	Units	Reference
a	DB Load	100	percent	4
b.	Heat Input to DB, HHV	583	MMBtu/hr HHV	2
c.	NOx Concentration	2.00	ppmvd @ 15% O_2	2
d.	CO Concentration	2.00	ppmvd @ 15% O_2	2
e.	VOC Concentration	2.00	ppmvd @ 15% O_2	2
f.	NH_3 Slip	5.00	ppmvd @ 15% O_2	2
g1	Original PM10 Emission Factor	0.0076	lb/MMBtu	2
g2	Reduced PM10 Emission Factor = [0.0076 - (0.25 x 0.0076)] = 0.0057	0.0057	lb/MMBtu	see Section 3
h.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
i.	Volume of gas at STP for 1 lb-mol of gas	385	scf/lb-mol	2
j.	Hours of operation	24	hrs/day	Maximum
k.	Annual Number of Hours of Operation	8,760	hrs/yr	Maximum
l.	Reduced SOx Emission Factor	0.60	lb/MMscf	5

Calculate Maximum Hourly Fuel Consumption Rate (MMscf/hr) in Terms of HHV

Maximum Hourly Fuel Consumption Rate (MMscf/hr) = Heat Input (MMBtu/hr HHV) / NG Heating Value (Btu/scf HHV)		
Maximum Hourly Fuel Consumption Rate (MMscf/hr) = 583 (MMBtu/hr) / 1050 (Btu/scf)	0.555	MMscf/hr

Calculate SOx Emission Rate

SOx Emission Rate = 0.6 lb/MMscf x 0.555 MMscf/hr	0.33	lb/hr

Calculate PM10 Emission Rate

PM10 Emission Rate = 0.0057 lb/MMBtu x 583 MMBtu/hr	3.32	lb/hr

Appendix 15B
Magnolia Power Plant Permit Upgrade Project 2024
Development Of Criteria Pollutant Emission Factors (after Upgrade)
Normal Operation Only Duct Burner (Hourly Emissions), Reduced EF

Natural Gas Used by the Combustion Turbine

Calculate GT Exhaust Rate			
GT Calculated Exhaust Rate			
GT Exhaust Rate, Dry (MMScf/hr) = GT Rated heat input (MMBtu/hr) x 8710 x [20.9/(20.9-15.0)]/1000000		17.99	MMscf/hr
GT Exhaust Rate, Dry (MMScf/hr) = 583 MMBtu/hr x 8710 x [20.9/(20.9-15.0)]/1000000			
Calculation of Emission Factors for NOx, CO, VOC and NH_3			
Molecular Weight of NOx (NO2)		46	lb/lb-mole
Molecular Weight of CO		28	lb/lb-mole
Molecular Weight of VOC (CH4)		16	lb/lb-mole
Molecular Weight of NH3		17	lb/lb-mole
NOx Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack NOx Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
NOx Hourly Emission at 15% O2, dry = 17.99 x 2 x 46/385	lb/hr	4.30	lb/hr
NOx Hourly Emission at 15% O2, dry = 4.3 lb/hr/0.555 MMscf/hr	lb/MMscf	7.75	lb/MMscf
CO Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack CO Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
CO Hourly Emission at 15% O2, dry = 17.99 x 2 x 28/385	lb/hr	2.62	lb/hr
CO Hourly Emission at 15% O2, dry = 2.62 lb/hr/0.555 MMscf/hr	lb/MMscf	4.72	lb/MMscf
VOC Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack VOC Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
VOC Hourly Emission at 15% O2, dry = 17.99 x 2 x 16/385	lb/hr	1.50	lb/hr
VOC Hourly Emission at 15% O2, dry = 1.5 lb/hr/0.555 MMscf/hr	lb/MMscf	2.70	lb/MMscf
NH_3 Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack NH3 Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
NH3 Hourly Emission at 15% O2, dry = 17.99 x 5 x 17/385	lb/hr	3.97	lb/hr
NH3 Hourly Emission at 15% O2, dry = 3.97 lb/hr/0.555 MMscf/hr	lb/MMscf	7.15	lb/MMscf

APPENDIX A-16B
Magnolia Power Plant Permit Modification Project 2024
Criteria Pollutant Emissions (after Upgrade)
GT+ DB (Peak) Normal Operation (Hourly Emissions), Reduced EF

Appendix A-16B
Magnolia Power Plant Permit Modification Project 2024
Criteria Pollutant Emissions (after Upgrade)
GT+ DB (Peak) Normal Operation (Hourly Emissions), Reduced EF

Natural Gas Used by the GT and DB

Device ID Number: GE 7FA
No. of Devices: One Gas Turbine

Process Equipment Description: GE 7FA with DLN
Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction, CO Catalyst, and Dry-Low-NOx Combustor

Parameter Symbols/Names	Values	
Fuel burned per hour (one GT + one DB)	2.558	MMscf/hr
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Process Operation Schedule	12	hrs/day

Criteria Species Name	Hourly Max Emissions (lb/hr)	Hourly Max Emissions (grams/sec)
Oxides of Nitrogen (NOx)	19.80	2.495
Carbon Monoxide (CO)	12.05	1.518
Volatile Organic Compounds (VOC)	6.89	0.868
Ammonia (NH_3)	18.30	2.306
Particulate Matter Ten Microns and Less (PM10)	13.73	1.730
Sulfur Oxides (SO_2)	1.53	0.193

Emission (g/sec) = Emission (lb/hr) x 453.592/3600

Appendix A-16B
Magnolia Power Plant Permit Modification Project 2024
Development Of Criteria Pollutant Emission Factors (after Upgrade)
GT+ DB (Peak) Normal Operation (Hourly Emissions), Reduced EF

Natural Gas Used by the GT and DB

Input Data

		Value	Units	Reference
a	Duct Burner (DB) Load	100	percent	4
b.	GT Load	100	percent	4
c.	Heat Input to GT, HHV	2103	MMBtu/hr HHV	4
d.	Heat Input to Duct Burner, HHV	583	MMBtu/hr HHV	2
e.	Heat Input to GT and Duct Burner Combined = 2103 + 583 HHV	2686	MMBtu/hr HHV	Calculated
f.	NOx Concentration	2.00	ppmvd @ 15% O_2	2
g.	CO Concentration	2.00	ppmvd @ 15% O_2	2
h.	VOC Concentration	2.00	ppmvd @ 15% O_2	2
i.	NH_3 Slip	5.00	ppmvd @ 15% O_2	2
j1.	Original PM10 Emission Factor (Duct Burner)	0.0076	lb/MMBtu	2
j2.	Reduced PM10 Emission Factor (Duct Burner) =[0.0076 - (0.25 x 0.0076)] = 0.0057	0.00570	lb/MMBtu	see Section 3
k1.	Original PM10 Emission Factor (GT)	0.0066	lb/MMBtu	2
k2.	Reduced PM10 Emission Factor (GT)	0.00495	lb/MMBtu	see Section 3
m.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
n.	Volume of gas at STP for 1 lb-mol of gas	385	scf/lb-mol	2
o.	SOx Emission Factor	0.60	lb/MMscf	5

Calculate Maximum Hourly Fuel Consumption Rate (MMscf/hr) in Terms of HHV

Maximum Hourly Fuel Consumption Rate (MMscf/hr) = Heat Input (MMBtu/hr HHV) / NG Heating Value (Btu/scf HHV)

Maximum Hourly Fuel Consumption Rate (MMscf/hr) = 2686 (MMBtu/hr) / 1050 (Btu/scf) — 2.558 MMscf/hr

Calculate SOx Emission Rate

SOx Emission Rate = 0.6 lb/MMscf x 2.558 MMscf/hr — 1.53 lb/hr

Calculate PM10 Emission Rate, GT

PM10 Emission Rate = 0.00495 lb/MMBtu x 2103 MMBtu/hr — 10.41 lb/hr

Calculate PM10 Emission Rate, Duct Burner

PM10 Emission Rate = 0.0057 lb/MMBtu x 583 MMBtu/hr — 3.32 lb/hr

PM10 Emission Rate, Duct Burner + GT = 10.41 + 3.32 lb/hr — 13.73 lb/hr

Calculate GT Exhaust Rate

DB + GT Calculated Exhaust Rate

DB + GT Exhaust Rate, Dry (MMScf/hr) = DB + GT heat input (MMBtu/hr) x 8710 x [20.9/(20.9-15.0)]/1000000 — 82.87 MMscf/hr

DB+ GT Exhaust Rate, Dry (MMScf/hr) = 2686 MMBtu/hr x 8710 x [20.9/(20.9-15.0)]/1000000

Appendix A-16B
Magnolia Power Plant Permit Modification Project 2024
Development Of Criteria Pollutant Emission Factors (after Upgrade)
GT+ DB (Peak) Normal Operation (Hourly Emissions), Reduced EF

Natural Gas Used by the GT and DB

Calculation of Emission Factors for NOx, CO, VOC and NH_3			
Molecular Weight of NOx (NO2)		46	lb/lb-mole
Molecular Weight of CO		28	lb/lb-mole
Molecular Weight of VOC (CH4)		16	lb/lb-mole
Molecular Weight of NH3		17	lb/lb-mole
NOx Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack NOx Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
NOx Hourly Emission at 15% O2, dry = 82.87 x 2 x 46/385	lb/hr	19.80	lb/hr
NOx Hourly Emission at 15% O2, dry = 19.8 lb/hr/2.558 MMscf/hr	lb/MMscf	7.74	lb/MMscf
CO Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack CO Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
CO Hourly Emission at 15% O2, dry = 82.87 x 2 x 28/385	lb/hr	12.05	lb/hr
CO Hourly Emission at 15% O2, dry = 12.05 lb/hr/2.558 MMscf/hr	lb/MMscf	4.71	lb/MMscf
VOC Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack VOC Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
VOC Hourly Emission at 15% O2, dry = 82.87 x 2 x 16/385	lb/hr	6.89	lb/hr
VOC Hourly Emission at 15% O2, dry = 6.89 lb/hr/2.558 MMscf/hr	lb/MMscf	2.69	lb/MMscf
NH_3 Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack NH3 Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
NH3 Hourly Emission at 15% O2, dry = 82.87 x 5 x 17/385	lb/hr	18.30	lb/hr
NH3 Hourly Emission at 15% O2, dry = 18.3 lb/hr/2.558 MMscf/hr	lb/MMscf	7.15	lb/MMscf

APPENDIX A-17
Magnolia Power Project Permit Modification Project 2024
Summary Hourly Emissions for the Upgraded MPP, Reduced EF

Appendix A-17
Magnolia Power Project Permit Modification Project 2024
Summary Hourly Emissions for the Upgraded MPP, Reduced EF

Input Data				
		Value	**Units**	**Reference**
a	NOx Emissions from GT, Normal Operation	15.51	lb/hr	App A-14B
b.	CO Emissions from GT, Normal Operation	9.44	lb/hr	App A-14B
c.	VOC Emissions from GT, Normal Operation	5.39	lb/hr	App A-14B
d.	NH3 Emissions from GT, Normal Operation	14.33	lb/hr	App A-14B
e.	PM10 Emissions from GT, Normal Operation	10.41	lb/hr	App A-14B
f	SOx Emissions from GT, Normal Operation	1.20	lb/hr	App A-14B
g.	NOx Emissions from Duct Burner only	4.30	lb/hr	App A-15B
h.	CO Emissions from Duct Burner only	2.62	lb/hr	App A-15B
i.	VOC Emissions from Duct Burner only	1.50	lb/hr	App A-15B
j.	NH3 Emissions from Duct burner only	3.97	lb/hr	App A-15B
k.	PM10 Emissions from Duct Burner only	3.32	lb/hr	App A-15B
l.	SOx Emissions from Duct Burner only	0.33	lb/hr	App A-15B
m.	NOx Emissions from Gas Turbine and Duct Burner, Peak Operation	19.80	lb/hr	App A-16B
n.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	12.05	lb/hr	App A-16B
o.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.89	lb/hr	App A-16B
p.	NH3 Emissions from Gas Turbine + Duct Burner, Peaking Operation	18.30	lb/hr	App A-16B
q.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	13.73	lb/hr	App A-16B
r.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.53	lb/hr	App A-16B
	Startup Duration	**6**	**hours**	App A.11
s.	NOx Emissions, Startup	518.00	lb/event	App A.11
t.	CO Emissions, Startup	588.00	lb/event	App A.11
u.	VOC Emissions, Startup	35.00	lb/event	App A.11
v.	PM10 Emissions, Startup	83.25	lb/event	App A.11
x.	SOx Emissions, Startup	9.04	lb/event	App A.11
	Shutdown Duration	**0.50**	**hour**	App A-12
y.	NOx Emissions, Shutdown	29.00	lb/event	App A-12
z.	CO Emissions, Shutdown	141.00	lb/event	App A-12
aa.	VOC Emissions, Shutdown	20.00	lb/event	App A-12
bb.	PM10 Emissions, Shutdown	6.94	lb/event	App A-12
cc.	SOx Emissions, Shutdown	0.75	lb/event	App A-12

APPENDIX A-18
Magnolia Power Project Permit Modification Project 2024
Daily Emissions for the Upgraded MPP
(after recommissioning), Reduced EF

Appendix A-18
Magnolia Power Project Permit Modification Project 2024
Daily Emissions for the Upgraded MPP (after Recommissioning), Reduced EF

Input Data

		Value	Units	Reference
a	NOx Emissions from GT, Normal Operation	15.51	lb/hr	App A-14B
b.	CO Emissions from GT, Normal Operation	9.44	lb/hr	App A-14B
c.	VOC Emissions from GT, Normal Operation	5.39	lb/hr	App A-14B
d.	PM10 Emissions from GT, Normal Operation	10.41	lb/hr	App A-14B
e.	SOx Emissions from GT, Normal Operation	1.20	lb/hr	App A-14B
f.	NOx Emissions from Gas Turbine and Duct Burner, Peaking Operation	19.80	lb/hr	App A-16B
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	12.05	lb/hr	App A-16B
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.89	lb/hr	App A-16B
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	13.73	lb/hr	App A-16B
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.53	lb/hr	App A-16B
k.	**Startup Duration**	**6**	**hours**	App A-11
l.	NOx Emissions, Startup	518.00	lb/event	App A-11
m.	CO Emissions, Startup	588.00	lb/event	App A-11
n.	VOC Emissions, Startup	35.00	lb/event	App A-11
o.	PM10 Emissions, Startup	83.25	lb/event	App A-11
p.	SOx Emissions, Startup	9.04	lb/event	App A-11
q.	**Shutdown Duration**	**0.50**	**hour**	App A-12
r.	NOx Emissions, Shutdown	29.00	lb/event	App A-12
s.	CO Emissions, Shutdown	141.00	lb/event	App A-12
t.	VOC Emissions, Shutdown	20.00	lb/event	App A-12
u.	PM10 Emissions, Shutdown	6.94	lb/event	App A-12
v.	SOx Emissions, Shutdown	0.75	lb/event	App A-12
w.	**Number of hours in a day**	**24**	**hrs/day**	
x.	Permitted number of hours of duct burner operation in a day	12	hrs/day	Calculated
y.	Maximum number of GT operation without duct burner	12	hrs/day	Calculated
z.	Duration of one start	6	hrs/event	App A-11
aa.	Duration of one shutdown	0.5	hrs/event	App A-11
bb.	Duration of only GT operation with one start, one shutdown and 12 hours of duct burner operation	5.5	hrs/day	Calculated

Note: The scenario which results in the highest daily emissions is assumed for each pollutant. For NOx, CO and VOC maximum daily emissions are calculated assuming 1 startup, 1 shutdown, 12 hours of normal operation with duct burner and the remaining time in normal operation without duct burner (5.5 hrs). For PM10 and SOx, maximum daily emissions are based on 12 hrs/day normal operation without the duct burner and the remaining operation with the duct burner (12 hrs/day).

Calculation of Maximum Daily Emissions

NOx	= 518 lb/start + 29 lb/shutdown + (12 hrs x 19.8 lb/hr) + (5.5 hrs x 15.51 lb/hr)	**869.9**	**lb/day**
CO	= 588 lb/start + 141 lb/shutdown + (12 hrs x 12.05 lb/hr) + (5.5 hrs x 9.44 lb/hr)	**925.5**	**lb/day**
VOC	= 35 lb/start + 20 lb/shutdown + (12 hrs x 6.89 lb/hr) + (5.5 hrs x 5.39 lb/hr)	**167.3**	**lb/day**
PM10	= (12 hrs x 13.73 lb/hr) + (12 hrs x 10.41 lb/hr)	**289.7**	**lb/day**
SOx	= (12 hrs x 1.53 lb/hr) + (12 hrs x 1.2 lb/hr)	**32.8**	**lb/day**

APPENDIX A-19
Magnolia Power Project Permit Modification Project 2024
Monthly Emissions Recommissioning Month, Reduced EF

Appendix A-19
Magnolia Power Project Permit Modification Project 2024
Monthly Emissions Recommissioing Month, Reduced EF

Input Data				
		Value	**Units**	**Reference**
a	NOx Emissions from GT, Normal Operation	15.51	lb/hr	App A-14B
b.	CO Emissions from GT, Normal Operation	9.44	lb/hr	App A-14B
c.	VOC Emissions from GT, Normal Operation	5.39	lb/hr	App A-14B
d.	PM10 Emissions from GT, Normal Operation	10.41	lb/hr	App A-14B
e.	SOx Emissions from GT, Normal Operation	1.20	lb/hr	App A-14B
f.	NOx Emissions from Gas Turbine and Duct Burner, Peaking Operation	19.80	lb/hr	App A-16B
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	12.05	lb/hr	App A-16B
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.89	lb/hr	App A-16B
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	13.73	lb/hr	App A-16B
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.53	lb/hr	App A-16B
k.	**Startup Duration**	**6**	hours	App A-11
l.	NOx Emissions, Startup	518.00	lb/event	App A-11
m.	CO Emissions, Startup	588.00	lb/event	App A-11
n.	VOC Emissions, Startup	35.00	lb/event	App A-11
o.	PM10 Emissions, Startup	83.25	lb/event	App A-11
p.	SOx Emissions, Startup	9.04	lb/event	App A-11
q.	**Shutdown Duration**	**0.50**	hour	App A-12
r.	NOx Emissions, Shutdown	29.00	lb/event	App A-12
s.	CO Emissions, Shutdown	141.00	lb/event	App A-12
t.	VOC Emissions, Shutdown	20.00	lb/event	App A-12
u.	PM10 Emissions, Shutdown	6.94	lb/event	App A-12
v.	SOx Emissions, Shutdown	0.75	lb/event	App A-12
q.	**Recommissioing Duration**	**252**	hour	App A-8
r.	NOx Emissions, Recommissioning	3148.00	lb/event	App A-8
s.	CO Emissions, Recommissioing	8863.00	lb/event	App A-8
t.	VOC Emissions,Recommissioning	1236.00	lb/event	App A-8
u.	PM10 Emissions, Recommissioing	977.00	lb/event	App A-8
v.	SOx Emissions, Recommissioning	162.00	lb/event	App A-8
w.	Number of hours in a month	720	hrs/month	
x.	Number of starts in a month	5	starts/month	App A-1
y.	Duration of one start	6	hrs/event	App A-1
z.	Number of shutdowns per month	5	shutdowns/month	App A-1
aa.	Duration of one shutdown	0.5	hrs/event	App A-1
bb.	Number of hours in five startups	30	hrs/month	Calculated
cc.	Number of hours in five shutdowns	2.5	hrs/month	Calculated
dd.	Number of hours in Recommissioing	252	hrs	App A-8
ee.	Number of hours of normal operation with duct burner	240	hrs/month	App A-1
ff.	Maximum number of GT operation without duct burner	480	hrs/month	Calculated
gg.	Duration of only GT operation with five start, five shutdown, 240 hrs of duct burner, and 252 hrs of recommissioning	195.5	hrs/month	Calculated

Note: The scenario which results in the highest monthly emissions is assumed for each pollutant. For CO and VOC maximum monthly emissions are calculated with 5 startup, 5 shutdown, 240 hours of normal operation with duct burner, 252 hours of recommissioing, and the remaining time in normal operation. For PM10 and SOx, monthly emissions are based on 240 hrs/month normal operation with the duct burner and the remaining operation without the duct burner (480 hours).

Calculation of Maximum Monthly Emissions - Duct Burner 240 Hours + Recommissioning 252 hours in the Month

CO	= (588 lb x 5 starts) + (141 lb x 5 shutdowns)+ (240 hrs x 12.05 lb/hr) + (195.5 hrs x 9.44 lb/hr) + 8863 lb	**17,245.5**	**lb/month**
VOC	= (35 lb x 5 starts) + (20 lb x 5 shutdowns)+ (240 hrs x 6.89 lb/hr) + (195.5 hrs x 5.39 lb/hr) + 1236 lb	**4,218.3**	**lb/month**
PM10	= (240 hrs x 13.73 lb/hr) + (480 hrs x 10.41 lb/hr)	**8,292.0**	**lb/month**
SOx	= (240 hrs x 1.53 lb/hr) + (480 hrs x 1.2 lb/hr)	**943.2**	**lb/month**

APPENDIX A-20
Magnolia Power Project Permit Modification Project 2024
Monthly Emissions Upgraded MPP, After Recommissioning Month, Reduced EF

Appendix A-20
Magnolia Power Project Permit Modification Project 2024
Monthly Emissions Upgraded MPP, After Recommissioing Month, Reduced EF

Input Data

		Value	Units	Reference
a	NOx Emissions from GT, Normal Operation	15.51	lb/hr	App A-14B
b.	CO Emissions from GT, Normal Operation	9.44	lb/hr	App A-14B
c.	VOC Emissions from GT, Normal Operation	5.39	lb/hr	App A-14B
d.	PM10 Emissions from GT, Normal Operation	10.41	lb/hr	App A-14B
e.	SOx Emissions from GT, Normal Operation	1.20	lb/hr	App A-14B
f.	NOx Emissions from Gas Turbine and Duct Burner, Peak Operation	19.80	lb/hr	App A-16B
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	12.05	lb/hr	App A-16B
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.89	lb/hr	App A-16B
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	13.73	lb/hr	App A-16B
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.53	lb/hr	App A-16B
k.	Startup Duration	**6**	hours	App A-11
l.	NOx Emissions, Startup	518.00	lb/event	App A-11
m.	CO Emissions, Startup	588.00	lb/event	App A-11
n.	VOC Emissions, Startup	35.00	lb/event	App A-11
o.	PM10 Emissions, Startup	83.25	lb/event	App A-11
p.	SOx Emissions, Startup	9.04	lb/event	App A-11
q.	Shutdown Duration	**0.50**	hour	App A-12
r.	NOx Emissions, Shutdown	29.00	lb/event	App A-12
s.	CO Emissions, Shutdown	141.00	lb/event	App A-12
t.	VOC Emissions, Shutdown	20.00	lb/event	App A-12
u.	PM10 Emissions, Shutdown	6.94	lb/event	App A-12
v.	SOx Emissions, Shutdown	0.75	lb/event	App A-12
w.	Number of hours in a month	720	hrs/month	
x.	Number of starts in a month	5	starts/month	App A-1
y.	Duration of one start	6	hrs/event	App A-1
z.	Number of shutdowns per month	5	shutdowns/month	App A-1
aa.	Duration of one shutdown	0.5	hrs/event	App A-1
bb.	Number of hours in five startups	30	hrs/month	App A-1
cc.	Number of hours in five shutdowns	2.5	hrs/month	App A-1
dd.	Number of hours of normal operation with duct burner	240	hrs/month	App A-1
ee.	Maximum number of GT operation without duct burner	480	hrs/month	App A-1
ff.	Duration of only GT operation with five start, five shutdown, and 240 hours of duct burner operation	447.5	hrs/month	Calculated

Note: The scenario which results in the highest monthly emissions is assumed for each pollutant. For CO and VOC maximum monthly emissions are calculated with 5 startup, 5 shutdown, 240 hours of normal operation with duct burner, and the remaining time in normal operation without duct burner (447.5 hrs). For PM10 and SOx, monthly emissions are based on 240 hrs/month normal operation with the duct burner and the remaining operation without the duct burner (480 hours).

Calculation of Maximum Monthly Emissions - Duct Burner Operation 240 Hours in the Month

CO	= (588 lb x 5 starts) + (141 lb x 5 shutdowns)+ (240 hrs x 12.05 lb/hr) + (447.5 hrs x 9.44 lb/hr)	**10,761.4**	**lb/month**
VOC	= (35 lb x 5 starts) + (20 lb x 5 shutdowns)+ (447.5 hrs x 5.39 lb/hr) + (240 hrs x 6.89 lb/hr)	**4,340.6**	**lb/month**
PM10	= (240 hrs x 13.73 lb/hr) + (480 hrs x 10.41 lb/hr)	**8,292.0**	**lb/month**
SOx	= (240 hrs x 1.53 lb/hr) + (480 hrs x 1.2 lb/hr)	**943.2**	**lb/month**

APPENDIX A-21B
Magnolia Power Project Permit Modification Project 2024
Annual Emissions Upgraded MPP (1st YR Operation), Reduced EF

Appendix A-21B
Magnolia Power Project Permit Modification Project 2024
Annual Emissions Upgraded MPP (1st YR Operation with Recommissioning), Reduced EF

Input Data

		Value	Units	Reference
a	NOx Emissions from GT, Normal Operation	15.51	lb/hr	App A-14B
b.	CO Emissions from GT, Normal Operation	9.44	lb/hr	App A-14B
c.	VOC Emissions from GT, Normal Operation	5.39	lb/hr	App A-14B
d.	PM10 Emissions from GT, Normal Operation	10.41	lb/hr	App A-14B
e.	SOx Emissions from GT, Normal Operation	1.20	lb/hr	App A-14B
f.	NOx Emissions from Gas Turbine and Duct Burner, Peak Operation	19.80	lb/hr	App A-16B
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	12.05	lb/hr	App A-16B
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.89	lb/hr	App A-16B
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	13.73	lb/hr	App A-16B
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.53	lb/hr	App A-16B
k.	**Startup Duration**	**6**	hours	App A-11
l.	NOx Emissions, Startup	518.00	lb/event	App A-11
m.	CO Emissions, Startup	588.00	lb/event	App A-11
n.	VOC Emissions, Startup	35.00	lb/event	App A-11
o.	PM10 Emissions, Startup	83.25	lb/event	App A-11
p.	SOx Emissions, Startup	9.04	lb/event	App A-11
q.	**Shutdown Duration**	**0.50**	hour	App A-12
r.	NOx Emissions, Shutdown	29.00	lb/event	App A-12
s.	CO Emissions, Shutdown	141.00	lb/event	App A-12
t.	VOC Emissions, Shutdown	20.00	lb/event	App A-12
u.	PM10 Emissions, Shutdown	6.94	lb/event	App A-12
v.	SOx Emissions, Shutdown	0.75	lb/event	App A-12
w.	NOx Emissions, Recommissioning	3,146.00	lb/event	App A-8
x.	CO Emissions, Recommissioming	8,863.00	lb/event	App A-8
y.	VOC Emissions, Recommissioning	1,236.00	lb/event	App A-8
z.	PM10 Emissions, Recommissioning	975.00	lb/event	App A-8
aa.	SOx Emissions, Recommissioning	162.00	lb/event	App A-8
bb.	Number of hours in a year	8,760	hrs/year	
cc.	Outage hours per year	252		App A-1
dd.	Recommissioing hours in the year	252		App A-1
ee.	Hours of year in operation, 1st year	8,256	hrs/year	Calculated
ff.	Number of starts per month	5	starts/month	App A-1
gg.	Number of starts in a year	60	starts/year	App A-1
hh.	Duration of one start	6	hrs/event	App A-1
ii.	Number of shutdowns per month	5	shutdowns/month	App A-1
jj.	Number of shutdowns per year	60	shutdowns/year	App A-1
kk.	Duration of one shutdown	0.5	hrs/event	App A-1
ll.	Number of hours in 60 startups (annual)	360	hrs/year	Calculated
mm.	Number of hours in 60 shutdowns (annual)	30	hrs/year	Calculated
nn.	Number of hours of normal operation with duct burner	1,000	hrs/year	App A-1
oo.	Noral operating hours without DB, Commissioning, 60 start & 60 shutdown = (8256 - 1000 -360 - 30)	6,866	hrs/year	Calculated
pp.	Maximum number of GT operation without duct burner = (8256 - 1000)	7,256	hrs/year	Calculated

Note: The scenario which results in the highest annual emissions is assumed for each pollutant. For NOx, CO and VOC maximum annual emissions are calculated assuming 60 startup, 60 shutdown, 1,000 hours of normal operation with duct burner, the remaining time in normal operation without duct burner (6,866 hrs) + emissions during recommissioing.
PM10 and SOx, annual emissions are based on 1,000 hrs/month normal operation with the duct burner, the remaining operation without the duct burner (7,256 hours) + emissions during recommissioning..

Appendix A-21B
Magnolia Power Project Permit Modification Project 2024
Annual Emissions Upgraded MPP (1st YR Operation with Recommissioning), Reduced EF

Calculation of Annual Emissions for NOx, CO and VOC				
NOx	= (518 lb x 60 starts) + (29 lb x 60 shutdowns)+ (1000 hrs x 19.8 lb/hr) + (6866 hrs x 15.51 B62lb/hr) + 3146 lb/yr	162,258	lb/year	
CO	= (588 lb x 60 starts) + (141 lb x 60 shutdowns)+ (1000 hrs x 12.05 lb/hr) + (6866 hrs x 9.44 lb/hr) + 8863 lb/yr	129,468	lb/year	
VOC	= (35 lb x 60 starts) + (20 lb x 60 shutdowns)+ (1000 hrs x 6.89 lb/hr) + (6866 hrs x 5.39 lb/hr) + 1236 lb/yr	48,434	lb/year	
Calculation of Annual Emissions for PM10, SOx				
PM10	= (1000 hrs x 13.73 lb/hr) + (7256 hrs x 10.41 lb/hr) + 975 lb/yr	90,240	lb/year	
SOx	= (1000 hrs x 1.53 lb/hr) + (7256 hrs x 1.2 lb/hr) + 162 lb/yr	10,399	lb/year	
Calculation of Annual Emissions for NOx and PM10 in g/sec for Dispersion Modeling				
NOx		2.334	g/sec	
PM10		1.298	g/sec	
SOX		0.150	g/sec	

APPENDIX A-22R
Magnolia Power Project Permit Modification Project 2024
Annual NOX Emissions Upgraded MPP (no Recommissioning), 2nd Yr

Appendix A-22R
Magnolia Power Project Permit Modification Project 2024
Annual NOx Emissions Upgraded MPP (no Recommissioning), 2nd Yr

Input Data

		Value	Units	Reference
a	NOx Emissions from GT, Normal Operation	15.51	lb/hr	App A-14B
f.	NOx Emissions from Gas Turbine and Duct Burner, Peak Operation	19.80	lb/hr	App A-16B
k.	**Startup Duration**	**6**	hours	App A-11
l.	NOx Emissions, Startup	518.00	lb/event	App A-11
q.	**Shutdown Duration**	**0.50**	hour	App A-12
r.	NOx Emissions, Shutdown	29.00	lb/event	App A-12
w.	Number of hours in a year	8,760	hrs/year	
x.	Outage hours per year	252		App A-1
y.	Hours per year in operation	8,508	hrs/year	App A-1
z.	Number of starts per month	5	starts/month	App A-1
aa.	Number of starts in a year	60	starts/year	App A-1
bb.	Duration of one start	6	hrs/event	App A-1
cc.	Number of shutdowns per month	5	shutdowns/month	App A-1
dd.	Number of shutdowns per year	60	shutdowns/year	App A-1
ee.	Duration of one shutdown	0.5	hrs/event	App A-1
ff.	Number of hours in 60 startups (annual)	360	hrs/year	App A-1
gg.	Number of hours in 60 shutdowns (annual)	30	hrs/year	App A-1
hh.	Number of hours of normal operation with duct burner	1,000	hrs/year	App A-1
ii.	Hours in normal opeartion without DB, 60 start & 60 shutdown = (8508 - 1000 -360 - 30)	7,118	hrs/year	App A-1
jj.	Maximum number of GT operation without duct burner = (8508 - 1000)	7,508	hrs/year	Calculated

Note: Annual NOx emissions is calculated assuming 60 startup, 60 shutdown, 1,000 hours of normal operation with duct burner and the remaining time in normal operation without duct burner (7,118 hrs).

Calculation of Annual Emissions for NOx

NOx	= (518 lb x 60 starts) + (29 lb x 60 shutdowns)+ (1000 hrs x 19.8 lb/hr) + (7118 hrs x 15.51 lb/hr)	163,020	lb/year

APPENDIX A-23
Magnolia Power Project Permit Upgrade Project 2024
SCAQMD Toxic Air Contaminant Emissions, Including Ammonia
Normal Operation, GT + Duct Burner

Appendix A-23
Magnolia Power Project Permit Upgrade Project 2024
SCAQMD Toxic Air Contaminant Emissions, Including Ammonia
Normal Operation, GT + Duct Burner

Natural Gas Used by the Combustion Turbines

Process Units:		MMscf				
Control Equipment:		SCR System CO Catalyst				
Yearly Emis. Est. Equation:		F_y x EF				
Max Hourly Emis. Est. Equation:		F_m x EF				
Parameter Symbols/Names			**Values**			
F_y = Total Yearly Amount of Fuel Burned			17,596	MMscf/yr		
F_m = Maximum Hourly Amount of Fuel Burned			2.558	MMscf/hr		
EF = Emission Factor			See below	lbs/MMscf		
Annual operation of GT without DB			7,508	hrs/yr	hours/year	

Toxic Air Contaminant	Air Toxic CAS Number	Emission Factor (lb/MMscf)	Emission Factor (lb/MMBtu)	Hourly Max Emissions (lb/hr)	Annual Emissions (lbs/yr)	Annual Emissions (tons/yr)
Ammonia	7664417	NA	NA	1.83E+01	1.26E+05	6.29E+01
1,3-Butadiene	106990	4.52E-04	4.30E-07	1.16E-03	7.95E+00	3.98E-03
Acetaldehyde	75070	4.20E-02	4.00E-05	1.07E-01	7.39E+02	3.70E-01
Acrolein	107028	3.80E-03	3.62E-06	9.72E-03	6.69E+01	3.34E-02
Benzene	71432	3.42E-03	3.26E-06	8.75E-03	6.02E+01	3.01E-02
Ethylbenzene	100414	3.36E-02	3.20E-05	8.59E-02	5.91E+02	2.96E-01
Formaldehyde	50000	3.78E-01	3.60E-04	9.67E-01	6.65E+03	3.33E+00
Propylene Oxide	75569	3.05E-02	2.90E-05	7.80E-02	5.37E+02	2.68E-01
Toluene	108883	1.37E-01	1.30E-04	3.50E-01	2.41E+03	1.21E+00
Xylenes	1330207	6.72E-02	6.40E-05	1.72E-01	1.18E+03	5.91E-01
Benzo(a)anthracene	56556	2.26E-05	2.15E-08	5.78E-05	3.98E-01	1.99E-04
Benzo(a)pyrene	50328	1.39E-05	1.32E-08	3.56E-05	2.45E-01	1.22E-04
Benzo(b)fluoranthene	205992	1.13E-05	1.08E-08	2.89E-05	1.99E-01	9.94E-05
Benzo(k)fluoranthene	207089	1.10E-05	1.05E-08	2.81E-05	1.94E-01	9.68E-05
Chrysene	218019	2.52E-05	2.40E-08	6.45E-05	4.43E-01	2.22E-04
Diebenz(a,h)anthracene	53703	2.35E-05	2.24E-08	6.01E-05	4.14E-01	2.07E-04
Indeno(1,2,3-cd)pyrene	193395	2.35E-05	2.24E-08	6.01E-05	4.14E-01	2.07E-04
Naphthalene	91203	1.66E-03	1.58E-06	4.25E-03	2.92E+01	1.46E-02

	Ammonia Annual Emissions					
		Emissions, DB "On"		1.83E+04	lb/yr	
		Emissions, Only GT "On"		14.33	lb/hr	
		Emissions, Only GT "On"		1.08E+05	lb/yr	
		Total		1.26E+05	lb/yr	

Appendix A-23
Magnolia Power Project Permit Upgrade Project 2024
SCAQMD Toxic Air Contaminant Emissions (g/s), Including Ammonia
Normal Operation, GT + Duct Burner

Natural Gas Used by the Combustion Turbines

Process Units:		MMscf			
Control Equipment:		SCR System, CO Catalyst and Dry Low Nox Reduction			
Yearly Emis. Est. Equation:		F_y x EF			
Max Hourly Emis. Est. Equation:		F_m x EF			
Parameter Symbols/Names			**Values**		
F_y = Total Yearly Amount of Fuel Burned			17,596	MMscf/yr	
F_m = Maximum Hourly Amount of Fuel Burned			2.558	MMscf/hr	
EF = Emission Factor			See below	lbs/MMscf	
Process Operation Schedule					
			7,508	hours/year	

Toxic Air Contaminant	Air Toxic CAS Number	Emission Factor (lb/MMscf)	Emission Factor (lb/MMBtu)	Hourly Max Emissions (grams/sec)	Annual Emissions (grams/sec)
Ammonia	7664417	NA	NA	2.31E+00	1.81E+00
1,3-Butadiene	106990	4.52E-04	4.30E-07	1.46E-04	1.14E-04
Acetaldehyde	75070	4.20E-02	4.00E-05	1.35E-02	1.06E-02
Acrolein	107028	3.80E-03	3.62E-06	1.22E-03	9.62E-04
Benzene	71432	3.42E-03	3.26E-06	1.10E-03	8.66E-04
Ethylbenzene	100414	3.36E-02	3.20E-05	1.08E-02	8.50E-03
Formaldehyde	50000	3.78E-01	3.60E-04	1.22E-01	9.57E-02
Propylene Oxide	75569	3.05E-02	2.90E-05	9.83E-03	7.72E-03
Toluene	108883	1.37E-01	1.30E-04	4.42E-02	3.47E-02
Xylenes	1330207	6.72E-02	6.40E-05	2.17E-02	1.70E-02
Benzo(a)anthracene	56556	2.26E-05	2.15E-08	7.28E-06	5.72E-06
Benzo(a)pyrene	50328	1.39E-05	1.32E-08	4.48E-06	3.52E-06
Benzo(b)fluoranthene	205992	1.13E-05	1.08E-08	3.64E-06	2.86E-06
Benzo(k)fluoranthene	207089	1.10E-05	1.05E-08	3.55E-06	2.78E-06
Chrysene	218019	2.52E-05	2.40E-08	8.12E-06	6.38E-06
Diebenz(a,h)anthracene	53703	2.35E-05	2.24E-08	7.57E-06	5.95E-06
Indeno(1,2,3-cd)pyrene	193395	2.35E-05	2.24E-08	7.57E-06	5.95E-06
Naphthalene	91203	1.66E-03	1.58E-06	5.35E-04	4.20E-04

Note:

1. Annual average emissions in g/sec are estimated by diving the annual emissions by 8,760 hours.

Appendix A-23
Magnolia Power Project Permit Upgrade Project 2024
Hazardous Air Pollutant Emissions
Normal Operation, GT + Duct Burner

Natural Gas Used by the Combustion Turbines

Process Units:		MMscf				
Control Equipment:		SCR System, CO Catalyst and Dry-Low-Nox Reduction				
Yearly Emis. Est. Equation:		F_y x EF				
Max Hourly Emis. Est. Equation:		F_m x EF				
Parameter Symbols/Names			**Values**			
F_y = Total Yearly Amount of Fuel Burned			17,596	MMscf/yr		
F_m = Maximum Hourly Amount of Fuel Burned			2.558	MMscf/hr		
EF = Emission Factor			See below	lbs/MMscf		
Process Operation Schedule						
			7,508	hours/year		

Hazardous Air Pollutant	Air Toxic CAS Number	Emission Factor (lb/MMscf)	Emission Factor (lb/MMBtu)	Hourly Max Emissions (lb/hr)	Annual Emissions (lbs/yr)	Annual Emissions (tons/yr)
1,3-Butadiene	106990	4.52E-04	4.30E-07	1.16E-03	7.95E+00	3.98E-03
Acetaldehyde	75070	4.20E-02	4.00E-05	1.07E-01	7.39E+02	3.70E-01
Acrolein	107028	3.80E-03	3.62E-06	9.72E-03	6.69E+01	3.34E-02
Benzene	71432	3.42E-03	3.26E-06	8.75E-03	6.02E+01	3.01E-02
Ethylbenzene	100414	3.36E-02	3.20E-05	8.59E-02	5.91E+02	2.96E-01
Formaldehyde	50000	3.78E-01	3.60E-04	9.67E-01	6.65E+03	3.33E+00
Propylene Oxide	75569	3.05E-02	2.90E-05	7.80E-02	5.37E+02	2.68E-01
Toluene	108883	1.37E-01	1.30E-04	3.50E-01	2.41E+03	1.21E+00
Xylenes	1330207	6.72E-02	6.40E-05	1.72E-01	1.18E+03	5.91E-01
Acenaphthene	83329	1.90E-05	1.81E-08	4.86E-05	3.34E-01	1.67E-04
Acenaphthylene	208968	1.47E-05	1.40E-08	3.76E-05	2.59E-01	1.29E-04
Anthracene	120127	3.38E-05	3.22E-08	8.65E-05	5.95E-01	2.97E-04
Benzo(a)anthracene	56556	2.26E-05	2.15E-08	5.78E-05	3.98E-01	1.99E-04
Benzo(a)pyrene	50328	1.39E-05	1.32E-08	3.56E-05	2.45E-01	1.22E-04
Benzo(b)fluoranthene	205992	1.13E-05	1.08E-08	2.89E-05	1.99E-01	9.94E-05
Benzo(e)pyrene	192972	5.44E-07	5.00E-10	1.39E-06	9.57E-03	4.79E-06
Benzo(g,h,i)perylene	191242	1.37E-05	1.30E-08	3.50E-05	2.41E-01	1.21E-04
Benzo(k)fluoranthene	207089	1.10E-05	1.05E-08	2.81E-05	1.94E-01	9.68E-05
Chrysene	218019	2.52E-05	2.40E-08	6.45E-05	4.43E-01	2.22E-04
Indeno(1,2,3-cd)pyrene	193395	2.35E-05	2.24E-08	6.01E-05	4.14E-01	2.07E-04
Naphthalene	91203	1.66E-03	1.58E-06	4.25E-03	2.92E+01	1.46E-02
Diebenz(a,h)anthracene	53703	2.35E-05	2.24E-08	6.01E-05	4.14E-01	2.07E-04
Fluoranthene	206440	4.32E-05	4.11E-08	1.11E-04	7.60E-01	3.80E-04
Fluorene	86737	5.80E-05	5.52E-08	1.48E-04	1.02E+00	5.10E-04
Phenanthrene	85018	3.13E-04	2.98E-07	8.01E-04	5.51E+00	2.75E-03
Pyrene	129000	2.77E-05	2.64E-08	7.09E-05	4.87E-01	2.44E-04
					Total Hazardous Air Pollutants (HAPs) (tons/yr) =	**6.14E+00**

Note:
1. Total HAPs are equal to total air toxics, excluding ammonia emissions

Appendix A-23
Magnolia Power Project Permit Upgrade Project 2024
Hourly Air Toxics Emissions
Normal Operation, GT + Duct Burner

Natural Gas Used by the Combustion Turbine

Input Data

		Value	Units	Reference
a.	Heat Input to DB, HHV, in a hour	583	MMBtu/hr HHV	2
b.	Heat Input to GT, HHV , in a hour	2,103	MMBtu/hr HHV	6
c.	Heat Input to GT + DB, HHV, in a hour	2,686	MMBtu/hr HHV	Calculated
d.	Total requested hours of operation (GT & DB)	8,508	Hours/Year	1
e.	NG Used by the GT and DB in a hour, MMscf	2.558	MMscf/hr	Calculated
f.	DB Operating hours in a year	1,000	Hours	2
g.	Only GT Operating hours in a year	7,508	Hours	Calculated
h.	NG Used by GT in 7,508 hours, MMBtu	15,789,324	MMBtu/yr, HHV	Calculated
i.	NG Used by GT + DB in 1,000 hours, MMBtu	2,686,000	MMBtu/yr, HHV	Calculated
k.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
l.	NG Used by the GT and DB in a year, MMscf	17,596	MMscf/yr	Calculated

Appendix A-23
Magnolia Power Project Permit Upgrade Project 2024
Development Of The Stack Gas Exit Velocity
Normal Operation, GT + Duct Burner

Natural Gas Used by the Combustion Turbine

		Value	Units	Reference
Stack Parameters for HRA				
		Value	**Units**	**Reference**
a.	**For acute, chronic as well as carcinogenic health risk**			
b.	Stack height	45.70	meter	6
c.	Stack inside diameter	5.80	meter	6
d.	Stack Exit Temperature,K	356.4	K	App 10
e.	Stack exit velocity	20.10	m/sec	App 9

Appendix A-23
Magnolia Power Project Permit Upgrade Project 2024
SCAQMD Toxic Air Contaminant Emission Factors
Normal Operation, GT + Duct Burner

Fuel HHV = 1,050 Btu/scf
To convert emission factor in lbs/MMBtu to lbs/MMscf multiply by natural gas HHV.
To convert emission factor in lbs/MMscf to lbs/MMBtu divide by natural gas HHV.

Substance Category	TAC	CAS No.	Emission Factor (lbs/MMBtu)	Emission Factor (lbs/MMscf)	Emission Factor Source
VOC	1,3-Butadiene	106990	4.30E-07	4.52E-04	9
VOC	Acetaldehyde	75070	4.00E-05	4.20E-02	9
VOC	Acrolein	107028	3.62E-06	3.80E-03	10
VOC	Benzene	71432	3.26E-06	3.42E-03	10
SVOC	Ethylbenzene	100414	3.20E-05	3.36E-02	9
VOC	Formaldehyde	50000	3.60E-04	3.78E-01	10
VOC	Propylene Oxide	75569	2.90E-05	3.05E-02	11
VOC	Toluene	108883	1.30E-04	1.37E-01	11
VOC	Xylenes	1330207	6.40E-05	6.72E-02	11
PAH	Benzo(a)anthracene	56556	2.15E-08	2.26E-05	11
PAH	Benzo(a)pyrene	50328	1.32E-08	1.39E-05	11
PAH	Benzo(b)fluoranthene	205992	1.08E-08	1.13E-05	11
PAH	Benzo(k)fluoranthene	207089	1.05E-08	1.10E-05	11
PAH	Chrysene	218019	2.40E-08	2.52E-05	11
PAH	Diebenz(a,h)anthracene	53703	2.24E-08	2.35E-05	11
PAH	Indeno(1,2,3-cd)pyrene	193395	2.24E-08	2.35E-05	11
PAH	Naphthalene	91203	1.58E-06	1.66E-03	11

Appendix A-23
Magnolia Power Project Permit Upgrade Project 2024
Hazardous Air Pollutant Emission Factors
Normal Operation, GT + Duct Burner

Fuel HHV = 1,050 Btu/scf
To convert emission factor in lbs/MMscf to lbs/MMBtu divide by natural gas HHV.
To convert emission factor in lbs/MMBtu to lbs/MMscf multiply by natural gas HHV.

Substance Category	HAP	CAS No.	Emission Factor (lbs/MMBtu)	Emission Factor (lbs/MMscf)	Emission Factor Source
VOC	1,3-Butadiene	106990	4.30E-07	4.52E-04	10
VOC	Acetaldehyde	75070	4.00E-05	4.20E-02	10
VOC	Acrolein	107028	3.62E-06	3.80E-03	11
VOC	Benzene	71432	3.26E-06	3.42E-03	11
SVOC	Ethylbenzene	100414	3.20E-05	3.36E-02	10
VOC	Formaldehyde	50000	3.60E-04	3.78E-01	11
VOC	Propylene Oxide	75569	2.90E-05	3.05E-02	10
VOC	Toluene	108883	1.30E-04	1.37E-01	10
VOC	Xylenes	1330207	6.40E-05	6.72E-02	10
PAH	Acenaphthene	83329	1.81E-08	1.90E-05	12
PAH	Acenaphthylene	208968	1.40E-08	1.47E-05	12
PAH	Anthracene	120127	3.22E-08	3.38E-05	12
PAH	Benzo(a)anthracene	56556	2.15E-08	2.26E-05	12
PAH	Benzo(a)pyrene	50328	1.32E-08	1.39E-05	12
PAH	Benzo(b)fluoranthene	205992	1.08E-08	1.13E-05	12
PAH	Benzo(e)pyrene	192972	5.00E-10	5.44E-07	12
PAH	Benzo(g,h,i)perylene	191242	1.30E-08	1.37E-05	12
PAH	Benzo(k)fluoranthene	207089	1.05E-08	1.10E-05	12
PAH	Chrysene	218019	2.40E-08	2.52E-05	12
PAH	Indeno(1,2,3-cd)pyrene	193395	2.24E-08	2.35E-05	12
PAH	Naphthalene	91203	1.58E-06	1.66E-03	12
PAH	Diebenz(a,h)anthracene	53703	2.24E-08	2.35E-05	12
PAH	Fluoranthene	206440	4.11E-08	4.32E-05	12
Non-VOC	Fluorene	86737	5.52E-08	5.80E-05	12
PAH	Phenanthrene	85018	2.98E-07	3.13E-04	12
PAH	Pyrene	129000	2.64E-08	2.77E-05	12

APPENDIX A-24
Development of Stack Parameters, GT Operation at 100% Load
Magnolia Power Project Upgrade 2024

Appendix A-24
Development of Stack Parameters, GT Operation at 100% Load
Magnolia Power Project Upgrade 2024

Input Data

		Value	Units	Ref
a.	GT Operation at 100% Load		---	
b.	Stack Exit Temperature	200.50	^oF	4
c.	Stack Exit Temperature, °R = Stack Exit Temperature (°F) + 460	660.50	°R	Calculated
d.	Standard Temperature	60	^oF	---
e.	Standard Temperature	520	^oR	---
f.	Standard Molar Volume	385	scf/lb-mole	2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2
i.	Wet F factor at zero per cent oxygen	10,610	wscf/MMBtu	2
j.	Percent Oxygen, wet	12.12	%	7
k.	Stack Base Elevation	560	ft	Sec 2
m.	Natural Gas Higher Heating Value	1,050	Btu/scf	2
n.	Fuel Input, HHV	2,103	MMBtu/hr	4

Calculate Stack Gas Volumetric Flow Rate and Exit Velocity

Stack Gas Volumetric Flow Rate

Stack gas volumetric flow rate in Wet Standard Cubic Feet Per Hour (WSCFH) @ 0% O_2

= Fuel flow (MMBtu/hr HHV) x F factor (10610 wscf/MMBtu HHV)

= 2103 (MMBtu/hr HHV) x 10610 (scf/MMBtu HHV)

Stack Gas Flow = 22,312,830 SCFH

Flow Rate (SCFH at Stack Gas O_2) = Flow Rate (SCFH @ 0% O_2) x {20.9 (%)/[(20.9 (%) - Stack Gas O_2 (%)]}

SCFH @ 12.12 % = 22312830 (SCFH) x {20.9 (%)/[20.9 % - 12.12 (%)]}

SCFH @ 12.12 % = 53,113,684 SCFH

Stack gas volumetric flow rate in Actual Cubic Feet Per Hour (ACFH)

Stack Gas Flow Rate, ACFH = Stack Gas Flow (SCF [Stack Gas Temp (^oR)] / [Standard Temp (^oR)]

= 53113684 (SCFH) x (660.5 / 520) 67,464,593 ACFH

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2

Stack Cross Sectional Area (ft^2) = 3.1416 x (19 (ft) x 19 (ft) / (2 x 2)) = 283.53 ft^2

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFH) / [Stack Cross Sectional Area (ft^2) x 3,600 (sec/hr)]

Stack Gas Velocity (ft/sec) = 67464593 (ACFH) / [283.53 (ft2) x 3,600 (sec/hr)] = 66.10 ft/sec

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Stack Gas Velocity (m/sec) = 66.1 (ft/sec) x 0.3048 (m/ft) = 20.1 m/sec

K° =(°F − 32) × 5/9 + 273.15

Stack Temperature Degrees K = 366.8

Unit		Stack Gas Flow Rate (SCFH)	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFH)	
MPP		53,113,684	200.50	660.50	67,464,593	

	Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
	MPP	19.0	66.10	20.10	5.80	150	45.70	366.8

APPENDIX A-25
Development of Stack Parameters, GT + DB Operation at 100% Load
Magnolia Power Project Upgrade 2024

Appendix A-25
Development of Stack Parameters, GT + DB Operation at 100% Load
Magnolia Power Project Upgrade 2024

Input Data

		Value	Units	Ref
a.	GT Operation at 100% Load		---	
b.	Stack Exit Temperature	181.90	^oF	4
c.	Stack Exit Temperature, °R = Stack Exit Temperature (°F) + 460	641.90	°R	Calculated
d.	Standard Temperature	60	^oF	---
e.	Standard Temperature	520	^oR	---
f.	Standard Molar Volume	385	scf/lb-mole	2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2
i.	Wet F factor at zero per cent oxygen	10,610	wscf/MMBtu	2
j.	Percent Oxygen, wet	10.32	%	7
k.	Stack Base Elevation	560	ft	Sec 2
m.	Natural Gas Higher Heating Value	1,050	Btu/scf	2
n.	Fuel Input, HHV (2103 + 583)	2,686	MMBtu/hr	4

Calculate Stack Gas Volumetric Flow Rate and Exit Velocity

Stack Gas Volumetric Flow Rate

Stack gas volumetric flow rate in Wet Standard Cubic Feet Per Hour (WSCFH) @ 0% O_2

= Fuel flow (MMBtu/hr HHV) x F factor (10610 wscf/MMBtu HHV)

= 2686 (MMBtu/hr HHV) x 10610 (scf/MMBtu HHV)

Stack Gas Flow = 28,498,460 SCFH

Flow Rate (SCFH at Stack Gas O_2) = Flow Rate (SCFH @ 0% O_2) x {20.9 (%)/[(20.9 (%) - Stack Gas O_2 (%)]}

SCFH @ 10.32 % = 28498460 (SCFH) x {20.9 (%)/[20.9 % - 10.32 (%)]}

SCFH @ 10.32 % = 56,296,580 SCFH

Stack gas volumetric flow rate in Actual Cubic Feet Per Hour (ACFH)

Stack Gas Flow Rate, ACFH = Stack Gas Flow (SCF [Stack Gas Temp (^oR)] / [Standard Temp (^oR)]

= 56296580 (SCFH) x (641.9 / 520) 69,493,798 ACFH

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2

Stack Cross Sectional Area (ft^2) = 3.1416 x (19 (ft) x 19 (ft) / (2 x 2)) = 283.53 ft^2

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFH) / [Stack Cross Sectional Area (ft^2) x 3,600 (sec/hr)]

Stack Gas Velocity (ft/sec) = 69493798 (ACFH) / [283.53 (ft2) x 3,600 (sec/hr)] = 68.08 ft/sec

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Stack Gas Velocity (m/sec) = 68.08 (ft/sec) x 0.3048 (m/ft) = 20.8 m/sec

K° =(°F − 32) × 5/9 + 273.15

Stack Temperature Degrees K = 356.4

Unit		Stack Gas Flow Rate (SCFH)	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFH)	
MPP		56,296,580	181.90	641.90	69,493,798	

	Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
	MPP	19.0	68.08	20.80	5.80	150	45.70	356.4

APPENDIX A-26
Magnolia Power Project Permit Modification Project 2024
Calculation of Green House Gas Annual Emissions
Natural Gas Used by the Combustion Turbine

Appendix A.26
Magnolia Power Project Permit Modification Project 2024
Calculation of Green House Gas Annual Emissions
Natural Gas Used by the Combustion Turbine

		Value	Units	Reference
Input Data				
		Value	**Units**	**Reference**
a.	Heat Input to CT, HHV	2103	MMBtu/hr HHV	4
b.	Heat Input to DB, HHV	583	MMBtu/hr HHV	2
c.	CO_2 Emission Factor	53.02	kg CO_2/MMBtu	2
d.	CH_4 Emission Factor	0.001	kg CH_4/MMBtu	2
e.	N_2O Emission Factor	0.0001	kg N_2O/MMBtu	2
f.	CH_4 Global Warming Potential (GWP)	25		2
g.	N_2O Global Warming Potential (GWP)	298		2
h.	Natural Gas Heating Value, HHV	1,050	Btu/scf	2
i.	Total number of hours in a year	8,760	hrs/yr	
j.	Capacity factor for the MPP			
k.	Total operating hours for MPP	8,508	hrs/yr	3
l.	Total opearting hours per year for duct burner	1,000	hrs/yr	2
m.	Total opearting hours per year for the combustion turbine	8,508	hrs/yr	3
Calculate GHG Emission Factors in kg/MMscf				
n	Weighted U.S. Average MMBtu/scf assumed for the GHG emission factors	1.028.E-03	MMBtu/scf	12
n.	CO_2 Emission Factor converted to the US Average MMBtu/scf of 1.028 x 10^{-3}	51,576	kg CO_2/MMscf	
o.	CH4 Emission Factor converted to the US Average MMBtu/scf of 1.028 x 10^{-3}	0.97	kg CH_4/MMscf	
p.	N2O Emission Factor converted to the US Average MMBtu/scf of 1.028 x 10^{-3}	0.097	kg N_2O/MMscf	
Calculate Total Heat Input for the CT and DB in MMscf/hr, HHV				
q.	Total Heat Input to DB in the year, HHV (583 x 1000)	583,000	MMBtu/yr	
r.	Total Heat Input to CT in the year, HHV (2103 x 8502)	17,892,324	MMBtu/yr	
s.	Total Heat Input to the CT and the DB in the year, HHV	18,475,324	MMBtu/yr	
t.	Total Heat Input to the CT and DB in MMscf	17595.55	MMscf/yr	
Calculate CO_2 Emission Rate				
	CO2 Emission Rate = 17595.55 MMscf/yr x 51576 kgCO2/MMscf	907,508,087	kg CO_2/yr	
	909,953,868 x 0.001102 = 1,002,769.16 Metric tons	1,000,073.91	ton CO_2/yr	
Calculate CH_4 Emission Rate				
	CH4 Emission Rate = 17595.55 MMscf/yr x 0.97 kgCH4/MMscf	17,068	kg CH_4/yr	
	14,277 x 0.001102 = 15.73 Metric tons	18.81	ton CH_4/yr	
	CH4 Emission Rate in CO2e = ton CH4/yr metric ton CH4/yr x 25 GWP of CH4	470.25	ton CO2e/yr	
Calculate N_2O Emission Rate				
	N2O Emission Rate = 17595.55 MMscf/yr x 0.097 kg N2O/MMscf	1,707	kg N_2O/yr	
	1,707 x 0.001102 = 1.88 Metric tons	1.88	ton N_2O/yr	
	N2O Emission Rate in CO2e = ton N2O/yr metric ton N2O/yr x 298 GWP of N2O	560.24	ton CO2e/yr	
Calculate Mass Emission Rate of CO_2, CH_4 and N_2O				
	Mass emission rate of CO_2, CH_4 and N_2O	1,000,095	Total GHG Mtpy	
Calculate CO2e Emission Rate of CO_2, CH_4 and N_2O				
	CO_2e emission rate of CO_2, CH_4 and N_2O	1,001,104	Total CO2e Mtpy	

APPENDIX A-27
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Southern California Public Power Authority

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Ref. 1 1/2

APPLICATION FOR TITLE V PERMIT MODIFICATION

MAGNOLIA POWER PROJECT (MPP) UPGRADE
SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY

Prepared for:

Magnolia Power Project, SCPPA
164 West Magnolia Boulevard
Burbank, CA 91502
Facility ID: 128243

Submitted to:

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4182

July 2019

PREPARED BY:

EMP

ENVIRONMENTAL MANAGEMENT PROFESSIONALS, LLC
22811 MADRONA AVENUE, TORRANCE - CALIFORNIA 90505
Tel/Fax: (310) 539-0606; e-mail: krishnanand44@msn.com

E1002

Ref.1 2/2

Appendix A-1
Calculation of Operating Hours during the First Year of Operation

Currently Permitted Hours of MPP Operation

1. Total number of hours in a year	8760	hrs/yr
2. MPP facility is currently permitted for 8760 x 0.95 hours of operation	8322	hrs/yr
3. Number of starts per month permitted	5	starts/month
4. Number of hours in one start	6	hrs/start
5. Number of hours in start in one year (12 x 5 x 6)	360	hrs/yr
6. Number of shutdowns per month permitted	5	shut/month
7. Number of hours in one shutdown	0.5	hrs/start
8. Number of hours in shutdown in one year (12 x 5 x 0.5)	30	hrs/yr
9. Number of hours of duct burner operation permitted in a month	240	hrs/month
10. Number of hours of duct burner operation permitted in a year	1000	hrs/yr
11. Number of hours of MPP **regular** operation without duct burner	6932	hrs/yr
= 8322 - 360 - 30 -1000 = 6,932 hrs		

Calculation for the first year of Operation

12. MPP current permitted hours of operation	8322	hrs/yr
13. Total number of hours of recommissioning in January (17 x 24 = 408)	408	hrs/yr
14. Number of hours in January when CT will be "OFF" during recommissioning	96	hours
15. Number of hours in January when MPP CT will be "ON," during recommissioning	312	hours
17. Non-recommissioning hours of MPP during the first year of operation (8322-312)	8010	hours
15. Number of days in February through December	335	days
16. Number of hours in February through December (335 x 24)	8040	hours
17. Number of startups during the first year of regular operation (11 x 5 =55)	55	startup
18. Number of hours in startup (55 x 6)	330	hours
19. Number of shutdowns during the first year of regular operation (11 x 5 =55)	55	shutdown
20. Number of hours in shutdown (55 x 0.5)	27.5	hrs
21. Hours of duct burner operation during the first year of operation	1000	hours
22. Hours of MPP operation without startup, shutdown, duct burner and recommissioning	6652.5	hrs/yr
= (8010 - 330 - 27.5 -1000 = 6652.5) hrs		

Statement of Basis
Proposed Minor Permit Revision

Owner/Operator:	Burbank City, Burbank Water and Power, SCPPA 164 W. Magnolia Blvd Burbank, CA 91502
Facility ID:	128243
SIC Code:	4931
Equipment Location:	164 W. Magnolia Blvd Burbank, CA 91502
Application No.:	614702
Application Submittal Date:	July 18, 2019
Responsible Official:	Jorge Somoano General Manager (818) 238-3550

//

1.0 INTRODUCTION, SCOPE OF PERMIT, HISTORY AND RECOMMENDATION

Title V is a national operating permit program for air pollution sources established under the Clean Air Act. Facilities subject to Title V must obtain a Title V permit and comply with specific Title V procedures to modify the permit. Title V facilities are required to certify compliance with their permit on an annual basis. The intent of the program is to provide a comprehensive permit document with a clearer determination of applicable requirements, to enhance the enforceability of a source's air quality obligations, as well as to allow greater opportunity for public participation and public access to enforcement actions and facility emissions information.

The Burbank Water and Power (BWP) SCPPA facility is subject to Title V requirements because its potential to emit (PTE) of NOx and VOC emissions are greater than the major source thresholds (see Appendix E). Additionally, the turbine at this facility is defined as an affected unit under the Acid Rain provisions, making this facility an affected source [40CFR Part 72, §72.6(a)(3)]. The facility is not a major source of HAPs (see Appendix D).

The facility has requested to modify their permit by upgrading the combustor in the turbine to allow the turbine to operate at lower loads while still maintaining emission limits.

Appendix A

Criteria Pollutant Calculations

Emission Factors

Pollutant	Emission Factor	Source
NOx	2.0 ppmv	Manufacturer guarantee
CO	2.0 ppmv	Manufacturer guarantee
VOC	2.0 ppmv	Manufacturer guarantee
PM10 (GT)	0.0066 lbs/mmbtu	AP-42
PM10 (Duct Burner)	0.0076 lbs/mmbtu	Applicant
SOx	0.75 lbs/mmscf	Applicant
NH3	5.0 ppm	Manufacturer guarantee

Data

GT rated heat input	=	1,787 mmbtu/hr		
Duct burner rated heat input	=	583 mmbtu/hr		
F Factor	=	8710 scf/mmbtu @ 0% O2		
Fuel HHV	=	1050 btu/cf		
NO2 MW	=	46 lbs/lb-mole		
CO MW	=	28 lbs/lb-mole		
VOC MW	=	16 lbs/lb-mole		
Specific Molar Volume	=	385 ft3/lb-mole		
GT Calculated exhaust rate	=	1787*8710*(20.9/5.9)	=	55.14 mmscf/hr
DB calculated exhaust rate	=	583*8710*(20.9/5.9)	=	17.99 mmscf/hr
Combined exhaust rate			=	73.13 mmscf/hr
GT calculated fuel use	=	1787/1050	=	1.702 mmscf/hr
DB calculated fuel use	=	583/1050	=	0.555 mmscf/hr
Combined fuel use			=	2.257 mmscf/hr

H/2 Ref.2 2/14

Ref. 2
3/14

Emission Rates, Base Load Operation

Pollutant	GT Emission Rate	DB Emission Rate	Total
	lbs/hr	lbs/hr	lbs/hr
NOx	13.18	4.30	17.48
CO	8.02	2.62	10.64
VOC	4.58	1.50	6.08
PM10	11.79	4.43	16.22
SOx	1.28	0.42	1.7
NH3	12.17	3.97	16.15

Sample Calculations

NOx (GT) = [2.0*8710*1787*(20.9/5.9)*46]/385E6
= 13.18 lbs/hr

PM10 (GT) = 0.0066 *1787
= 11.79 lbs/hr

Emission Rates, Start Ups and Shutdowns[1]

Pollutant	Start Up Emission Rate	Total Start Up Emissions (6 hrs/event)	Shutdown Emission Rate	Total Shutdown Emissions (0.5 hrs/event)
	lbs/hr	lbs/event	lbs/hr	lbs/event
NOx	73.33	440	50	25
CO	83.33	500	240	120
VOC	5.00	30	34	17
PM10	11.79	70.74	11.79	5.90
SOx	1.28	7.68	1.28	0.64

1 All start up and shutdown emissions rates provided by the applicant, reference A/N 386305

Emission Rates, Uncontrolled[1]

Pollutant	Uncontrolled GT Emission Rate	Uncontrolled DB Emission Rate	Total
	lbs/hr	lbs/hr	lbs/hr
NOx	63	61	124
CO	73	31	104
VOC	14.1	3	17.1
PM10	11.79	4.43	16.22
SOx	1.28	0.42	1.7

1 All uncontrolled emissions rates provided by the manufacturer, reference A/N 386305

Emission Rates, Recommissioning[1]

Pollutant	Concentration	Mass Emissions
	Ppm @ 15%	lbs/hr
NOx	55	155.94
CO	27	55.64
VOC	37	43.76

These are the maximum hourly values as provided by the manufacturer. Note that the City of Burbank has asked to allow for a contingency and set the limit for NOx at 198 lbs/hr and CO at 84 lbs/hr during the recommissioning.

Maximum Daily Emissions

There will be no increase in maximum daily emissions when comparing the estimates for the maximum emissions that will occur on any given day during recommissioning to the current PTE calculations.

A. Current PTE Calculation (Pre Modification Emissions)

The scenario which results in the highest daily emissions is assumed for each pollutant. For NOx CO, and VOC, maximum daily emissions are calculated assuming 1 start up at the beginning of the day, ½ hour shutdown at the end of the day, and full load operation for the remaining hours of the day, with duct firing for a maximum of 12 hours per day as limited by permit condition. For PM10, and SOx, maximum daily emissions are based on 24 hrs/day base load operation.

Pollutant	Uncontrolled Daily Emissions, lbs/day	Controlled Daily Emissions, lbs/day
NOx	2299.5	747.3
CO	2269.5	815.8
VOC	268.7	145.2
PM10	336.1	336.1
SOx	35.8	35.8
NH3	382.3	382.3

Calculations

NOx uncontrolled = 440 lbs + 124 lbs/hr*12 hrs + 63 lbs/hr*5.5 hrs + 25 lbs = 2299.5 lbs
NOx controlled = 440 lbs + 17.48 lbs/hr*12 hrs + 13.18*5.5 hrs + 25 lbs = 747.3 lbs

CO uncontrolled = 500 lbs + 104 lbs/hr*12 hrs + 73 lbs/hr*5.5 hrs + 120 lbs= 2269.5 lbs
CO controlled = 500 lbs + 10.64 lbs/hr*12 hrs + 8.02 lbs/hr*5.5 hrs + 120 lbs = 815.8 lbs

VOC controlled= 30 lbs + 6.08 lbs/hr*12 hrs + 4.58 lbs/hr*5.5 hrs + 17 lbs = 145.2 lbs

Ref. 2
5/14

PM10 controlled = 16.22 lbs/hr*12 hrs + 11.79 lbs/hr*12 hrs = 336.1 lbs

B. Maximum Daily Recommissioning Emissions (Post Modification Emissions)

The applicant provided a breakdown of the daily recommissioning activities and the estimated emissions for NOx, CO, and VOC. For PM10 and SOx, the emissions are based on heat input, therefore the days with the highest heat input were used to estimate PM10 and SOx emissions during recommissioning. Refer to Appendix C. There will be no normal operation on any day when there is recommissioning activities.

Pollutant	Recommissioning Daily Emissions, lbs/day
NOx	552.53 (Day 3)
CO	201.86 (Day 4)
VOC	107.36 (Day 11)
PM10	218.67 (Day 9)
SOx	23.67 (Day 9)

Note that the City of Burbank has asked to allow for a contingency and set the limit for CO at 792 lbs/day during the recommissioning.

Calculations

PM10 = 0.0066 lbs/mmbtu* 33132.17 mmbtu = 218.67 lbs

SOx = 0.75 lbs/mmscf * (33132.17 mmbtu/1050 btu/scf) = 23.67 lbs

Change in Emissions Pre Modification vs Post Modification

Pollutant	Pre Modification Daily PTE Emissions	Post Modification Daily PTE Emissions	Change
NOx	747.3	552.53	-194.77
CO	815.8	201.86	-613.94
VOC	145.2	107.36	-37.84
PM10	336.1	218.67	-117.43
SOx	35.8	23.67	-12.13
NH3	382.3	382.3	0

Note that the City of Burbank has asked to allow for a contingency and set the limit for CO at 792 lbs/day during the recommissioning. Even with this higher limit, the maximum daily emissions during recommissioning are less than the pre modification PTE.

Monthly Emissions

There will be no increase in maximum monthly emissions when comparing the estimates for the emissions that will occur during the month when recommissioning is performed and normal operation resumes to the current PTE calculations for any pollutant.

A. Current PTE Calculation (Pre Modification Emissions)

The scenario which results in the highest monthly emissions is assumed for each pollutant. For NOx, CO and VOC monthly emissions are based on 5 starts ups per month (and 5 shutdowns), with the remaining hours in base load operation (240 hrs with duct firing, 447.5 hrs without duct firing). For PM10 and SOx, monthly emissions are based on 720 hours in baseload operation (240 hrs with duct firing, 480 hrs without duct firing) and no start ups or shutdowns.

Pollutant	Total Monthly Emissions	30-Day Average Emissions
NOx	12,418	405
CO	9,243	308
VOC	3,744	125
PM10	9,552	318
SOx	1,022	34

Calculations

NOx
440 lbs/start*5 starts + 17.48*240 + 13.18 lbs/hr*447.5 + 25 lbs/shutdown*5 shutdowns
12418 lbs

CO
500 lbs/start*5 starts + 10.64 lbs/hr*240 hrs + 8.02 lbs/hr*447.5 hrs + 120 lbs/shutdown*5 shutdowns
9243 lbs

VOC
30 lbs/start*5 starts + 6.08 lbs/hr*240 hrs + 4.58 lbs/hr*447.5 hrs + 17 lbs/shutdown*5 shutdowns
3744 lbs

SOx
1.7 lbs/hr*240 hrs + 1.28 lbs/hr*480 hrs
1,022 lbs

Ref. 2
7/14

PM10
16.22*240 hrs + 11.79*480 hrs
9,552 lbs

B. Maximum Monthly Recommissioning Emissions (Post Modification Emissions)

The scenario which results in the highest monthly emissions is assumed for each pollutant. The applicant provided an estimate of 312 hours of turbine operation and 96 hours of non-operation during recommissioning for a total of 408 hours, including at least 4 SU/SDs. In order to estimate maximum monthly emissions of NOx, CO, and VOC, it will be assumed that the turbine will operate the remaining hours in the month at base load with 1 additional SU/SD (limit of 5 per month). Furthermore, it will be assumed that duct firing will occur at the maximum allowed duration of 240 hours, and the remaining base load operation will be without duct firing. For PM10 and SOx, it will be assumed that the remaining hours after recommissioning are all at base load operation - 240 hours with duct firing and the rest without duct firing, and no start ups or shutdowns.

Operation Type	Duration, hours	NOx	CO	VOC
Recommissioning[1]	312	5656.51	1908.74	725.95
Down time during Recommissioning	96	0	0	0
Start Up (6 hours per start)	6	440	500	30
Shut Down (0.5 hours per shutdown)	0.5	25	120	17
Base Load w/o duct firing	89.5	1179.6	717.8	409.9
Base Load with duct firing	240	4195.2	2553.6	1459.2
Total	744	11496.3	5800.14	2642.1
30 Day Average		383	193	88

1 - includes 4 SU/SD

Calculations

NOx
5656.51 + 440 lbs/start*1 start + 17.48*240 + 13.18 lbs/hr*89.5 + 25 lbs/shutdown*1 shutdown
11496.3 lbs

CO
1908.74+ 500 lbs/start*1 start + 10.64 lbs/hr*240 hrs + 8.02 lbs/hr*89.5 hrs + 120 lbs/shutdown*1 shutdown
5008.14 lbs

VOC
725.95+ 30 lbs/start*1 start + 6.08 lbs/hr*240 hrs + 4.58 lbs/hr*89.5 hrs + 17 lbs/shutdown*1 shutdown
2642.1 lbs

Ref. 2
8|14

Operation Type	Duration, hours	PM10	SOx
Recommissioning	312	2783.4	301.28
Down time during Recommissioning	96	0	0
Base Load w/o duct firing	96	1131.8	122.9
Base Load with duct firing	240	3892.8	408
Total	744	7808	832.2
30 Day Average		260	28

PM10
2783.4 + 16.22 lbs/hr*240 hrs + 11.79 lbs/hr*96 hrs
8703.12 lbs

SOx
301.28 + 1.7 lbs/hr*240 hrs + 1.28 lbs/hr*96 hrs
930.24 lbs

Change in Monthly Emissions Pre-Modification vs. Post-Modification

	Pre Modification		Post Modification		Change	
Pollutant	Monthly Emissions	30-Day Average	Monthly Emissions	30-Day Average	Monthly Emissions	30-Day Average
NOx	12,418	405	11,496	383	-922	-22
CO	9,243	308	5,800	193	-3,443	-115
VOC	3,744	125	2,642	88	-1,102	-37
PM10	9,552	318	7,808	260	-1,744	-58
SOx	1,022	34	832	28	-190	-6

Annual Emissions (PTE)

There will be no increase in maximum annual emissions when comparing the estimates for the emissions that will occur during the 12 months when recommissioning is performed and normal operation resumes to the current PTE calculations for any pollutant.

Under this latest application, Burbank is proposing 408 hours of recommissioning operation (including 96 hours of turbine downtime and 4 SU/SD), 6550 hrs of baseload operation without duct firing, 1,000 of baseload operation with duct firing, along with 56 start ups and shutdowns outside of recommissioning (364 hours), for a total of 8322 hrs/yr.

Ref. 2
9114

A. Current PTE Calculation (Pre Modification Emissions)

	# of Events	Hours	NOx, lbs	CO, lbs	VOC, lbs	PM10, lbs	SOx, lbs	NH3, lbs
Start Up	60	360	26400	30000	1800	4244	461	0
Shutdown	60	30	1500	7200	1020	354	38	0
GT Baseload	/////////	6932	91364	55595	31749	81728	8873	84362
GT + DB Baseload	/////////	1000	17480	10640	6080	16220	~~1280~~ **1700**	16150
Totals		8,322	136,744	103,435	40,649	~~102,456~~ **102,546**	10,652 **11,072**	100,512

Note that PM10 and SOx calculations are being corrected from previous application A/N 598845

Calculations

NOx
440 lbs/start*60 starts + 17.48*1000 + 13.18 lbs/hr*6932 + 25 lbs/shutdown*60 shutdowns
136744 lbs

CO
500 lbs/start*60 starts + 10.64 lbs/hr*1000 hrs + 8.02 lbs/hr*6932 hrs + 120 lbs/shutdown*60 shutdowns
103435 lbs

VOC
30 lbs/start*60 starts + 6.08 lbs/hr*1000 hrs + 4.58 lbs/hr*6932 hrs + 17 lbs/shutdown*60 shutdowns
40649 lbs

PM10
70.74 lbs/start*60 starts + 16.22 lbs/hr*1000 hrs + 11.79 lbs/hr*6932 hrs + 5.90 lbs/shutdown*60 shutdowns
102546 lbs

SOx
7.68 lbs/start*60 starts + 1.7 lbs/hr*1000 hrs + 1.28 lbs/hr*6932 hrs + 0.64 lbs/shutdown*60 shutdowns
11072 lbs

B. Maximum Annual Emissions with Recommissioning (Post Modification Emissions)

	# of Events	Hours	NOx, lbs	CO, Lbs	VOC, lbs	PM10, lbs	SOx, lbs	NH3, lbs
Start Up	56	336	24640	28000	1680	3961	430	0
Shutdown	56	28	1400	6720	952	330	36	0
Recommissioning[1]	/////////	408	5656.51	1908.74	725.95	2783.4	301.28	3797
GT Baseload	/////////	6550	86329	52531	29999	77225	8384	79714
GT + DB Baseload	/////////	1000	17480	10640	6080	16220	1700	16150
	Totals	8,322	135,506	99,800	39,437	100,519	10,851	99,661

1 - includes 4 SU/SD and 96 hours of turbine downtime

Calculations

NOx
5656.51 + 440 lbs/start*56 starts + 17.48*1000 + 13.18 lbs/hr*6550 + 25 lbs/shutdown*56 shutdowns
135506 lbs

CO
1908.74 + 500 lbs/start*56 starts + 10.64 lbs/hr*1000 hrs + 8.02 lbs/hr*6550 hrs + 120 lbs/shutdown*56 shutdowns
99800 lbs

VOC
725.95 + 30 lbs/start*56 starts + 6.08 lbs/hr*1000 hrs + 4.58 lbs/hr*6550 hrs + 17 lbs/shutdown*56 shutdowns
39437 lbs

PM10
2783.4 + 70.74 lbs/start*56 starts + 16.22 lbs/hr*1000 hrs + 11.79 lbs/hr*6550 hrs + 5.90 lbs/shutdown*56 shutdowns
100519 lbs

SOx
301.28 + 7.68 lbs/start*56 starts + 1.7 lbs/hr*1000 hrs + 1.28 lbs/hr*6550 hrs + 0.64 lbs/shutdown*56 shutdowns
10431 lbs

Ref. 2
11/14

Change in Annual Emissions Pre-Modification vs. Post-Modification

Pollutant	Pre Modification Annual Emissions	Post Modification Annual Emissions	Change
NOx	136,744	135,506	-1,238
CO	103,435	99,800	-3,635
VOC	40,649	39,437	-1,212
PM10	~~102,456~~ **102,546**	100,519	-2,027
SOx	~~10,652~~ **11,072**	10,851	-221
NH3	100,512	99,661	-851

Note that PM10 and SOx calculations are being corrected from previous application A/N 598845

Ref. 2
12/14

Appendix B

GHG Calculations

Out of the six GHG pollutants:

carbon dioxide, CO_2,
methane, CH_4,
nitrous oxide, N_2O
hydrofluorocarbons, HFCs
perfluorocarbons, PFCs
sulfur hexafluoride, SF_6

Only the first 3 are emitted by combustion sources. Sulfur hexafluoride can be emitted by circuit breakers.

The following emission factors and global warming potential (GWP) will be used in the calculations:

GHG Emission Factors

GHG	Emission Factor, natural gas		GWP
	kg/mmbtu	lbs/mmscf	
CO2	53.02	120,160	1.0
CH4	1.0E-03	2.27	21 25
N2O	1.0E-04	0.227	310

The emission factors in kg/mmbtu are converted to lbs/mmcf assuming the default HHV of 1028 btu/cf from 40 CFR98 Subpart C Table C-1. 1 kg = 2.2046 lbs.

CO2 equivalent (CO2e) is calculated using the following equation:

$$CO2e = CO2 + 25*CH4 + 298*N2O$$

Or, using fuel consumption (F):

$$CO2e = 120{,}160*F + 2.27*25*F + 0.227*298*F = 120{,}284*F \text{ (in lbs)}$$

$$CO2e = 60.142*F \text{ (in tons)}$$

Ref. 2
13/14

Post-Modification Turbine Annual Operating Schedule

Event	Duration/yr	Heat Input
Start	360	*(included below)*
Shutdown	30	*(included below)*
100% Load @ w/o DB	6932	1787 (includes start ups/shutdowns)
100% Load with DB	1000	2370
Total	8322	15,454,414

Turbine GHG PTE

GHG	Hourly Tons @ 2370 mmbtu/hr	Annual Tons @ 15,454,414 mmbtu/yr
CO2	138.5	903,217
CH4	2.61E-03	17
N2O	2.61E-04	1.7
Total Mass	138.5	903,236
CO2e	138.6	904,149

Estimated lbs of CO2 per MWH (based on PTE, not actual operating conditions)

Heat Rate no duct firing = (1787E6 btu/hr)/(181,100 + 85,000)kW = 6715.5 btu/kWh
Heat Rate with duct firing (2370E6 btu/hr)/(323,100 kW) = 7335.2 btu/kWh

Overall net heat rate = [(Heat Rate no duct firing * # of Hours no duct firing) + (Heat Rate with duct firing* # of Hours with duct firing)] /Total Annual Hours of Operation

Overall net heat rate = (6715.5 btu/kWh*7322 hrs + 7335.2 btu/Kwh*1000 hrs)/(8322) = 6790.0 btu/kWh

6,790.0 btu/kWh * 1000 kWh/MWh * 1*10-6 MMBtu/Btu * 53.02 kg CO2/MMBtu-HHV * 2.205 lb/kg = 793.8 lb CO2/MWH

793.8 lb CO2/netMWH @ HHV

Ref. 2
14/14

Past Actual GHG Emissions

Based on the previous 24 month annual average heat input of 8,836,018.6 mmbtu taken from Appendix G

Pollutant	Average Annual Emissions Previous 24 Months	
	lbs/yr	tons/yr
CO2	1033.01E+06	516,506
CH4	19,483	9.74
N2O	1,948	0.974
Total Mass	1033.03E+06	516,516
CO2e	1034.02E+06	517,012

Appendix C

Recommissioning Emissions

After installation of the new combustor, the turbine will undergo testing to ensure it can operate at the higher turndown ratios and still maintain compliance with its emission limits.

The recommissioning will take approximately 17 days and 312 operating hours.

Table C.1 Summary of Recommissioning Activities and Emissions

Day	Activity	CT Load (%)	Duration (hours)	Fuel Use	Total Emissions lbs			Outlet PPM
				MMBTU	NOx	CO	VOC	NOx
1	Cold Start	10	4	2256.10	394.86	140.48	75.45	51
2	(con'd)	10	1.6	902.44	157.95	56.19	30.18	51
	Checkout/Mapping	25	0.4	330.45	62.38	13.88	6.24	55
	Checkout/Mapping	35	0.4	396.83	4.77	22.26	17.50	3.5
	Checkout/Mapping	50	2	2408.82	16.88	6.69	0.36	2
	Checkout/Mapping	90	3.6	6237.29	45.20	10.69	1.06	2
	Daily Parking Point	50	12	14452.90	101.25	25.80	2.16	2
	DLN Rough Tune	50	3	3613.23	25.31	10.03	0.54	2
	DLN Rough Tune	90	1	1732.58	12.55	2.97	0.29	2
	Day 2 Total		24	30074.54	426.29	148.51	58.34	/////////
3	(con'd)	90	8	13860.65	100.44	23.76	2.35	2
	Shutdown/Restart	10	3	1692.08	296.15	105.36	56.59	51
	Mapping	25	1	826.12	155.94	34.69	15.61	55
	Day 3 Total		12	16378.85	552.53	163.81	74.55	/////////
4	(con'd)	25	1	826.12	155.94	34.69	15.61	55
	Mapping	35	2	1984.15	23.87	111.28	87.52	3.5
	Mapping	50	5	6022.04	42.19	16.72	0.9	2
	Daily Parking Point	50	12	14452.90	101.25	25.80	2.16	2
	Part Load Mapping	50	4	4817.63	33.75	13.37	0.72	2
	Day 4 Total		24	28102.84	357	201.86	106.91	/////////
5	(con'd)	50	5	6022.04	42.19	16.72	0.9	2
	Map-hot fuel	90	3	5197.75	37.66	8.91	0.88	2
	Daily Parking Point	50	12	14452.90	101.25	25.80	2.16	2
	Part/Base/Peak Map	90	4	6930.33	50.22	11.88	1.18	2
	Day 5 Total		24	32603.02	231.32	63.31	5.11	/////////
6	(con'd)	90	8	13860.65	100.44	23.76	2.35	2
	Daily Parking Point	50	12	14452.90	101.25	25.80	2.16	2
	Map-cold fuel 1	50	4	4817.97	33.75	13.37	0.72	2
	Day 6 Total		24	33131.52	235.44	62.93	5.23	/////////
7	Map-cold fuel 2	50	2	2408.48	16.88	6.69	0.36	2
	Part/Base/Peak Map	90	6	10395.49	75.33	17.82	1.76	2
	Daily Parking Point	50	12	14452.09	101.25	25.80	2.16	2
	Turndown Tuning	50	4	4817.63	33.75	13.37	0.72	2
	Day 7 Total		24	32073.69	227.21	63.38	5.00	/////////

Ref. 3

Outlook

RE: MPP Upgrades -Operation Scenarios Discussion

From Reyes, Claudia <CSReyes@burbankca.gov>
Date Tue 7/16/2024 2:55 PM
To krishnanand44 <krishnanand44@msn.com>
Cc Messineo, Frank <FMessineo@burbankca.gov>; Hsiao, Wendy <WHsiao@burbankca.gov>

Krishna,

Please see below, 186 additional operation hours will be needed.

8760	Hours in a Year
252	Outage Hours per Year (Three 60 hr outages + One 72hr outage)
8508	Operation Hours per Year
8322	Current Limit
186	**Additional Operation Hours**

Thank you,
Claudia S. Reyes

Ref. 4 1/2

Outlook

RE: MPP Upgrades VOC Commissioning Emissions

From Feher, Peter (GE Vernova) <Peter1.Feher@ge.com>
Date Thu 10/10/2024 12:43 PM
To Reyes, Claudia <CSReyes@burbankca.gov>; krishnanand44 <krishnanand44@msn.com>
Cc krishnanand44 <krishnanand44@msn.com>; Patel, Sagar B (GE Vernova) <sagar.B.patel@ge.com>

1 attachments (34 KB)
Test Plan Emissions Estimator 20241010 Send.xlsx;

Day of task	Task	Mode Units	CT Load MW	Runtime hours	Fuel rate MMBtu/hr, LHV	Fuel used for the task MMBtu, LHV	Fuel used for the task MMBtu, HHV	Stack Emissions per task NOx Lb	CO lb	VOC Lb	PM10 lb	SOx Lb	stack exh. temp. °F	stack exh. flow rate acfm
1	Cold start, steam temp match, M1P mapping	Tot_M1P	10	5	541	2,707	3,004	520	1,966	315	17.8	0	170	514,587
1	M3P Checkout	M3P	25	0.5	793	397	440	64	233	27	1.8	0	180	524,698
1	M62P Checkout	M62P	35	0.5	952	476	528	31	503	72	1.9	0	183	572,472
1	M63P & M5P partload mapping	C_P	50	2	1,156	2,312	2,566	18	39	0	8.9	0	218	695,692
1	M63PA partload mapping	C_PA	90	2	1,663	3,327	3,692	27	5	1	12.4	0	202	942,433
1	Overnight parking point	CP_Overnight	50	14	1,156	16,187	17,964	95	32	3	62.4	0	218	695,692
2	M63PA part/base/peak load mapping	C_PA	90	9	1,663	14,970	16,612	121	24	3	55.7	0	202	942,433
2	Overnight parking point	CP_Overnight	50	15	1,156	17,343	19,247	102	35	3	66.9	0	218	695,692
3	M63PA part/base/peak load mapping	C_PA	90	9	1,663	14,970	16,612	121	24	3	55.7	0	202	942,433
3	Overnight parking point	CP_Overnight	50	15	1,156	17,343	19,247	102	35	3	66.9	0	218	695,692
4	M63P & M5P partload mapping	C_P	50	9	1,156	10,406	11,548	82	173	2	40.1	0	218	679,267
4	Shutdown for fuel strainer removal	SD	0	15	0	0	0	0	0	0	0.0	0	130	0
5	Warm start, steam temp match, M1P mapping	Tot_M1P	10	3	541	1,624	1,803	312	1,180	189	10.7	0	185	526,845
5	M3P mapping	M3P	25	2	793	1,586	1,760	254	932	107	7.1	0	191	533,721
5	M62P mapping	M62P	35	2	952	1,905	2,114	122	2,014	288	7.7	0	202	589,397
5	M63P & M5P partload mapping	C_P	50	2	1,156	2,312	2,566	27	5	1	8.9	0	218	695,692
5	M63PA base/peak load performance testing	C_PA_tune	90	6	1,663	9,980	11,075	81	14	2	37.1	0	202	942,433
5	Overnight parking point	CP_Overnight	50	9	1,156	10,406	11,548	61	21	2	40.1	0	218	695,692
6	M63P & M5P partload mapping	C_P	50	7	1,156	8,094	8,982	64	135	2	31.2	0	218	695,692
6	M63PA part/base/peak load mapping	C_PA	90	2	1,663	3,327	3,692	27	5	1	12.4	0	202	942,433
6	M63PA base/peak load performance testing	C_PA_tune	90	2	1,663	3,327	3,692	27	5	1	12.4	0	202	942,433
6	Overnight parking point	CP_Overnight	50	13	1,156	15,031	16,681	88	30	3	58.0	0	218	695,692
7	M63PA autotune validation and AT loop stability testing	C_PA	90	5	1,663	8,316	9,229	67	13	2	30.9	0	202	942,433
7	M63P & M5P autotune validation and AT loop stability testing	C_P	50	5	1,156	5,781	6,416	45	96	1	22.3	0	218	695,692
7	Overnight parking point	CP_Overnight	50	14	1,156	16,187	17,964	95	32	3	62.4	0	218	695,692
8	M63P/M5P MECL performance testing	C_PA_tune	50	12	1,156	13,875	15,397	82	28	3	53.5	0	218	695,692
8	Shutdown for final software download & water wash	SD	0	12	0	0	0	0	0	0	0.0	0	170	0
9	Offline water wash	WW	0	24	0	0	0	0	0	0	0.0	0	120	0
10	Cold start, steam temp match, final schedule	Tot_M1P	10	2.7	541	1,462	1,622	281	1,062	170	9.6	0	170	514,587
10	Load to base	M3P	25	0.1	793	79	88	13	47	5	0.4	0	180	524,698
10	Load to base	M62P	35	0.1	952	95	106	6	101	14	0.4	0	195	583,161
10	Load to base	C_P	50	0.1	1,156	116	128	2	4	0.0	0.4	0	218	695,692
10	Contractual Performance Testing	C_PA_tune	90	12	1,663	19,959	22,150	108	13	4	74.3	0	202	942,433
10	Overnight parking point	CP_Overnight	50	9	1,156	10,406	11,548	61	21	2	40.1	0	218	695,692
11	Contractual Performance Testing	0	202	12	1,816	21,796	24,188	40	36	4	66.4	0	198	1,116,822

Footnotes

1 SCR catalyst - Typical exhaust gas temperature threshold for activation of NH_3 injection is approximately 520-570 °F. The SCR is typically activated 15 minutes after cold start.

2 CO catalyst - No "activation" control exists. Typical temperature threshold for effectiveness is approximately 460 to 500 °F. The CO catalyst is typically effective 12 minutes after cold start.

4 LHV= 917 Btu/scf - low heating value of fuel gas

5 HHV= 1,017 Btu/scf - High heating value of fuel gas

Ref. 42/2

Reference 5

Default Combustion Emission Factors

Revised January 2022

South Coast AQMD

Criteria Pollutant Emission Factors

External Combustion Equipment (for all sizes)

Fuel Type (fuel unit)	Organic Gases (lb/unit)	Nitrogen Oxides (lb/unit)	Sulfur Oxides (lb/unit)	Carbon Monoxide (lb/unit)	Particulate Matter (lb/unit)
Natural Gas (mmscf) / Boilers Only	5.50	100.00	0.60	84.00	7.60
Natural Gas (mmscf) / Other Equipment	7.00	130.00	0.60	35.00	7.50
LPG, Propane, Butane (1000 gal.)	0.26	12.80	4.60	3.20	0.28
Diesel/Distillate Oil (1000 gal.)	1.32	20.00	0.21	5.00	2.00

Internal Combustion Engines (ICE) (for all sizes)

Fuel Type (fuel unit) / Engine Type	Organic Gases (lb/unit)	Nitrogen Oxides (lb/unit)	Sulfur Oxides (lb/unit)	Carbon Monoxide (lb/unit)	Particulate Matter (lb/unit)
Natural Gas (mmscf) / 2 Stroke (Lean-Burn) ICE	122.00	3,233.00	0.60	394.00	39.00
Natural Gas (mmscf) / 4 Stroke (Lean-Burn) ICE*	120.00	4,162.00	0.60	323.00	10.00
Natural Gas (mmscf) / 4 Stroke (Rich-Burn) ICE	30.00	2,254.00	0.60	3,794.00	10.00
Natural Gas (mmscf) / Micro Turbine	77.7	54.4	0.6	466.00	6.73
LPG, Propane, Butane (1000 gal.) / All ICEs & Micro Turbine	83.00	139.00	0.35	129.00	5.00
Diesel/Distillate Oil (1000 gal.) / All ICEs & Micro Turbine	37.5	469.00	0.21	102.00	33.50
Gasoline (1000 gal.) / All ICEs & Micro Turbine	206.00	102.00	5.30	3,940.0	6.50

* If engine specification is not available, assume 4 Stroke (Lean-Burn) ICE.

Ref. 6

Outlook

RE: Upgrades to the Magnolia Power Plant (2024)

From Feher, Peter (GE Vernova) <Peter1.Feher@ge.com>
Date Fri 6/28/2024 1:20 PM
To krishna Nand <krishnanand44@msn.com>; Messineo, Frank <FMessineo@burbankca.gov>
Cc Reyes, Claudia <CSReyes@burbankca.gov>; Hsiao, Wendy <WHsiao@burbankca.gov>; Nareddy, Santosh K (GE Vernova) <santosh.nareddy@ge.com>; Brown, Nathan L (GE Vernova) <nathan.brown@ge.com>; Willson, Nathan R (GE Vernova) <nathan.willson@ge.com>; Whitright, Brian (GE Vernova) <brian.whitright@ge.com>; Fu, Yongqiang (GE Vernova) <yongqiang.fu@ge.com>

Hi Krishna and Frank
Krishna suggested a simplified method of startup emission estimate, which is simply prorating the startup emissions is your current permit proportionally with the ratio of maximum (post/pre upgrade) fuel gas consumption of the GT.
To us this approximation approach seems reasonable.
The following table can be used as a reference for this simplified method.
Please set up a conference call with the involved parties to discuss and align on next steps
Peter

Ambient Sweep - Pre Uprate Max Case — No peak, evap on

Ambient temp	°F	22.0	40.0	59.0	77.0	90.0	100.0	113.0
GT power	kW	185,564	179,289	170,938	167,596	161,099	158,130	154,487
GT heat rate	LHVBtu/kWh	9,028	9,092	9,199	9,258	9,359	9,411	9,481
GT fuel LHV	MMBtu/h	1,675	1,630	1,572	1,552	1,508	1,488	1,465
GT fuel HHV	MMBtu/h	1,859	1,809	1,745	1,722	1,673	1,652	1,625

Ambient Sweep - Post Uprate Max Case — No peak, evap on

Ambient temp	°F	22.0	40.0	59.0	77.0	90.0	100.0	113.0
GT power	kW	211,720	211,251	206,528	205,107	199,328	191,272	180,800
GT heat rate	LHVBtu/kWh	8,949	8,923	8,992	9,034	9,060	9,063	9,152
GT fuel LHV	MMBtu/h	1,895	1,885	1,857	1,853	1,806	1,733	1,655
GT fuel HHV	MMBtu/h	2,103	2,092	2,061	2,056	2,004	1,924	1,836

From: krishna Nand <krishnanand44@msn.com>
Sent: Tuesday, June 25, 2024 4:13 PM
To: Messineo, Frank <FMessineo@burbankca.gov>; Feher, Peter (GE Vernova) <Peter1.Feher@ge.com>
Cc: Reyes, Claudia <CSReyes@burbankca.gov>; Hsiao, Wendy <WHsiao@burbankca.gov>; Nareddy, Santosh K (GE Vernova) <santosh.nareddy@ge.com>; Brown, Nathan L (GE Vernova) <nathan.brown@ge.com>; Willson, Nathan R (GE Vernova) <nathan.willson@ge.com>; Whitright, Brian (GE Vernova) <brian.whitright@ge.com>; Fu, Yongqiang (GE Vernova) <yongqiang.fu@ge.com>
Subject: EXT: Re: Upgrades to the Magnolia Power Plant (2024)

Ref. 7

Outlook

RE: Oxygen Content (O2%)

From Feher, Peter (GE Vernova) <Peter1.Feher@ge.com>
Date Fri 8/2/2024 7:17 AM
To krishna Nand <krishnanand44@msn.com>; CSReyes@burbankca.gov <CSReyes@burbankca.gov>
Cc Patel, Sagar B (GE Vernova) <sagar.B.patel@ge.com>; Hsiao, Wendy <WHsiao@burbankca.gov>

Hi Krishna
Following up on my previous email.
The post upgrade maximum duct burner use will reduce the wet oxygen content of the stack gas from 12.12% to **10.32%** on volumetric basis.
This is at ISO condition and base load
Peter

From: Feher, Peter (GE Vernova)
Sent: Thursday, August 1, 2024 10:44 AM
To: 'krishna Nand' <krishnanand44@msn.com>; CSReyes@burbankca.gov
Cc: Patel, Sagar B (GE Vernova) <sagar.B.patel@ge.com>; Hsiao, Wendy <WHsiao@burbankca.gov>
Subject: RE: Oxygen Content (O2%)

Hi Krishna
The stack gas oxygen concentration at gas turbine base load without duct burner is **12.12% on volumetric wet basis**.
The stack gas oxygen concentration will be lower when duck burner is used. I will work on that value at maximum duct burner use after the current upgrade.
Peter

From: krishna Nand <krishnanand44@msn.com>
Sent: Wednesday, July 31, 2024 8:50 PM
To: Feher, Peter (GE Vernova) <Peter1.Feher@ge.com>; CSReyes@burbankca.gov
Cc: Patel, Sagar B (GE Vernova) <sagar.B.patel@ge.com>; Hsiao, Wendy <WHsiao@burbankca.gov>; krishna Nand <krishnanand44@msn.com>
Subject: EXT: Oxygen Content (O2%)

Hi Peter,

We also need information on Wet Oxygen content in the exhaust stack in percent for modeling analysis for normal operation (upgraded MPP CT). I presume this number will not be different when the system is running with the duct burner or without the duct burner. I may therefore need only one number please.

I would appreciate receiving this information early tomorrow please.

Thanks,
Krishna Nand

Ref. 8

Table 1 **Review Analysis of Magnolia Power Project (MPP) PM10 Emission Factors** **Source Test Result Data**		
Source Test/Report Date	**PM10 Emission Factor Duct Burner "Off"**	**PM10 Emission Factor Duct Burner "On"**
1. November 25 and 26, 2008	0.0007 lb/MMBtu	0.0006 lb/MMBtu
2. August 2 and 3, 2011	0.0001 lb/MMBtu	0.0010 lb/MMBtu
3. September 12, 2014	0.002 lb/MMBtu	0.001 lb/MMBtu
4. September 20, 2017	-	0.001 lb.MMBtu
5. May 26 and 27, 2020	0.000013 lb/MMBtu	0.0000079 lb/MMBtu
6. December 20, 21, 2023	0.95 lb/MMscf	1.20 lb/MMscf
7. December 20, 21, 2023	0.95/1050 (Btu/scf) = 0.0009 lb/MMBtu	1.20/1050 (Btu/scf) = 0.0011 lb/MMBtu
Highest PM10 Emission Factor, lb/MMBtu	**0.002**	**0.001**
Note: For MPP Permit Applications, the following PM10 Emission Factors were used: (a) 0.0066 lb/MMBtu for combustion turbine without duct burner. **(b)** 0.0076 b/MMBtu for combustion turbine with duct burner.		

Technology Transfer Network
Clearinghouse for Inventories & Emissions Factors

AP 42, Fifth Edition, Volume I
Chapter 3: Stationary Internal Combustion Sources

3.1 Stationary Gas Turbines

- Final Section - Supplement F, April 2000 (PDF 84K)
- Background Document (PDF 246K)
- Related Information

3.2 Natural Gas-fired Reciprocating Engines

- Final Section - Supplement F, August 2000 (PDF 52K)
- Background Document (PDF 160K)
- Related Information

3.3 Gasoline and Diesel Industrial Engines

- Final Section - Supplement B, October 1996 (PDF 35K)
- Background Document (PDF 184K)
  ERRATA - March 24, 2009
  In table 3.3-1, *The Emissions Factors for Uncontrolled Gasoline Industrial Engines*, the emissions factors values for carbon monoxide, CO, from gasoline fuel-fired engines (SCC 2-02-003-01, 2-03-003-01) are incorrect. Instead of 0.439 lb/hp-hr (power output) and 62.7 lb/mmBtu (fuel input), the correct emissions factors values are 6.96 E-03 lb/hp-hr (power output) and 0.99 lb/mmBtu (fuel input), respectively.

3.4 Large Stationary Diesel and All Stationary Dual-fuel Engines

- Final Section - Supplement B, October 1996 (PDF 41K)
- Background Document (PDF 211K) 1993 with September 1996 revisions

AP 42 Emissions Factors by Chapter

Ref. 9 2/2

Table 3.1-3. EMISSION FACTORS FOR HAZARDOUS AIR POLLUTANTS FROM NATURAL GAS-FIRED STATIONARY GAS TURBINES[a]

Emission Factors[b] - Uncontrolled		
Pollutant	Emission Factor (lb/MMBtu)[c]	Emission Factor Rating
1,3-Butadiene[d]	< 4.3 E-07	D
Acetaldehyde	4.0 E-05	C
Acrolein	6.4 E-06	C
Benzene[e]	1.2 E-05	A
Ethylbenzene	3.2 E-05	C
Formaldehyde[f]	7.1 E-04	A
Naphthalene	1.3 E-06	C
PAH	2.2 E-06	C
Propylene Oxide[d]	< 2.9 E-05	D
Toluene	1.3 E-04	C
Xylenes	6.4 E-05	C

[a] SCC for natural gas-fired turbines include 2-01-002-01, 2-02-002-01, 2-02-002-03, 2-03-002-02, and 2-03-002-03. Hazardous Air Pollutants as defined in Section 112 (b) of the *Clean Air Act.*

[b] Factors are derived from units operating at high loads (≥80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at "www.epa.gov/ttn/chief".

[c] Emission factors based on an average natural gas heating value (HHV) of 1020 Btu/scf at 60°F. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by 1020. These emission factors can be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this heating value.

[d] Compound was not detected. The presented emission value is based on one-half of the detection limit.

[e] Benzene with SCONOX catalyst is 9.1 E-07, rating of D.

[f] Formaldehyde with SCONOX catalyst is 2.0 E-05, rating of D.

Ref. 10 1/2

EMISSION FACTOR DOCUMENTATION FOR AP-42 SECTION 3.1 STATIONARY GAS TURBINES

Prepared for:

Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Research Triangle Park, NC

Prepared by:

Alpha-Gamma Technologies, Inc.
4700 Falls of Neuse Road
Raleigh, North Carolina

April 2000

Ref. 10.2/2

Table 3.4-1. SUMMARY OF EMISSION FACTORS FOR NATURAL GAS-FIRED GAS TURBINES

Natural Gas-Fired Gas Turbine HAP Emissions

			All Loads				High Loads: Greater Than or Equal to 80 Percent			
Pollutant	CAS No.	Control Method	Emission Factor (lb/MMBtu)	Emission Factor (lb/MMscf)	RSD Percent	Count	Emission Factor (lb/MMBtu)	Emission Factor (lb/MMscf)	RSD Percent	Count
1,3-Butadiene	106-99-0	Uncontrolled	< 4.29 E-07	< 4.38 E-04	121.5	2	< 4.29 E-07	< 4.38 E-04	121.5	2
Acetaldehyde	75-07-0	Uncontrolled	4.45 E-05	4.54 E-02	64.3	9	4.02 E-05	4.10 E-02	68.0	8
Acetaldehyde	75-07-0	CO Catalyst	1.76 E-04	1.80 E-01	139.5	2	1.76 E-04	1.80 E-01	139.5	2
Acrolein	107-02-8	Uncontrolled	8.31 E-06	8.48 E-03	71.5	7	6.36 E-06	6.49 E-03	50.9	6
Acrolein	107-02-8	CO Catalyst	3.62 E-06	3.69 E-03	NA	1	3.62 E-06	3.69 E-03	NA	1
Benzene	71-43-2	Uncontrolled	1.03 E-04	1.05 E-01	440.0	27	1.18 E-05	1.20 E-02	136.1	17
Benzene	71-43-2	CO Catalyst	3.26 E-06	3.33 E-03	101.9	2	3.26 E-06	3.33 E-03	101.9	2
Ethylbenzene	100-41-4	Uncontrolled	2.58 E-05	2.63 E-02	130.4	5	3.20 E-05	3.27 E-02	110.2	4
Formaldehyde	50-00-0	Uncontrolled	3.12 E-03	3.18 E+00	204.0	33	7.09 E-04	7.23 E-01	206.1	22
Formaldehyde	50-00-0	CO Catalyst	3.60 E-04	3.67 E-01	133.5	2	3.60 E-04	3.67 E-01	133.5	2
Naphthalene	91-20-3	Uncontrolled	1.37 E-06	1.40 E-03	87.6	5	1.27 E-06	1.30 E-03	107.3	4
PAH	NA	Uncontrolled	2.25 E-06	2.30 E-03	131.1	5	2.23 E-06	2.27 E-03	152.9	4
Propylene Oxide	75-56-9	Uncontrolled	< 2.86 E-05	< 2.92 E-03	NA	1	< 2.86 E-05	< 2.92 E-03	NA	1
Toluene	108-88-3	Uncontrolled	9.37 E-05	9.56 E-02	220.6	11	1.34 E-04	1.37 E-01	191.0	7
Xylenes	1330-20-7	Uncontrolled	5.48 E-05	5.59 E-02	108.1	7	6.38 E-05	6.50 E-02	93.2	6

Ref. 11

California Air Toxics Emission Factors Search Result

Download these data as a comma delimited file

ID	System Type	Material Type	SCC	APC Device	Other Description	CAS	Substance	Max Emission factor	Mean	Median	Unit	
4673	Turbine	Natural gas	20200203	COC/SCR	None	85-01-8	Phenanthrene	2.35E-03	3.13E-04	8.57E-05	lbs/MMcf	
4688	Turbine	Natural gas	20200203	COC/SCR	None	129-00-0	Pyrene	1.27E-04	2.77E-05	1.18E-05	lbs/MMcf	
4558	Turbine	Natural gas	20200203	COC/SCR	None	83-32-9	Acenaphthene	1.22E-04	1.90E-05	5.23E-06	lbs/MMcf	
4563	Turbine	Natural gas	20200203	COC/SCR	None	208-96-8	Acenaphthylene	8.25E-05	1.47E-05	2.88E-06	lbs/MMcf	
4578	Turbine	Natural gas	20200203	COC/SCR	None	120-12-7	Anthracene	1.53E-04	3.38E-05	9.38E-06	lbs/MMcf	
4593	Turbine	Natural gas	20200203	COC/SCR	None	56-55-6	Benzo(a)anthracene	1.34E-04	2.26E-05	3.61E-06	lbs/MMcf	TAC
4598	Turbine	Natural gas	20200203	COC/SCR	None	50-32-8	Benzo(a)pyrene	9.16E-05	1.39E-05	2.57E-06	lbs/MMcf	TAC
4603	Turbine	Natural gas	20200203	COC/SCR	None	205-99-2	Benzo(b)fluoranthene	6.72E-05	1.13E-05	2.87E-06	lbs/MMcf	TAC
4608	Turbine	Natural gas	20200203	COC/SCR	None	192-97-2	Benzo(e)pyrene	7.33E-07	5.44E-07	4.63E-07	lbs/MMcf	
4613	Turbine	Natural gas	20200203	COC/SCR	None	191-24-2	Benzo(g,h,i)perylene	8.25E-05	1.37E-05	3.03E-06	lbs/MMcf	
4618	Turbine	Natural gas	20200203	COC/SCR	None	207-08-9	Benzo(k)fluoranthene	6.72E-05	1.10E-05	2.87E-06	lbs/MMcf	TAC
4623	Turbine	Natural gas	20200203	COC/SCR	None	218-01-9	Chrysene	1.50E-04	2.52E-05	4.99E-06	lbs/MMcf	TAC
4658	Turbine	Natural gas	20200203	COC/SCR	None	193-39-5	Indeno(1,2,3-cd)pyrene	1.34E-04	2.35E-05	2.87E-06	lbs/MMcf	TAC
4663	Turbine	Natural gas	20200203	COC/SCR	None	91-20-3	Naphthalene	7.88E-03	1.66E-03	9.26E-04	lbs/MMcf	TAC
4628	Turbine	Natural gas	20200203	COC/SCR	None	53-70-3	Dibenz(a,h)anthracene	1.34E-04	2.35E-05	3.03E-06	lbs/MMcf	TAC
4638	Turbine	Natural gas	20200203	COC/SCR	None	206-44-0	Fluoranthene	3.05E-04	4.32E-05	1.07E-05	lbs/MMcf	
4643	Turbine	Natural gas	20200203	COC/SCR	None	86-73-7	Fluorene	4.58E-04	5.80E-05	1.56E-05	lbs/MMcf	

Reference 1281/2

Federal Register

Friday,
October 30, 2009

Part II

Environmental Protection Agency

40 CFR Parts 86, 87, 89 et al.

Mandatory Reporting of Greenhouse Gases; Final Rule

Reference 1.2.2/2

in Btu/lb, Btu/gal, or Btu/scf, as appropriate.

(F) The total quantity of each type of fossil fuel combusted during the reporting year, in lb, gallons, or scf, as appropriate.

(G) Annual biogenic CO_2 mass emissions, in metric tons.

(x) When ASTM methods D7459–08 and D6866–08 are used to determine the biogenic portion of the annual CO_2 emissions from MSW combustion, report:

(A) The results of each quarterly sample analysis, expressed as a decimal fraction (e.g., if the biogenic fraction of the CO_2 emissions from MSW combustion is 30 percent, report 0.30).

(B) Annual combined biomass and fossil fuel CO_2 emissions from MSW combustion, in metric tons of CO_2e.

(C) The quantities V_{ff}, V_{total}, and V_{MSW} from § 98.33(e)(4)(ii), if CEMS are used to measure CO_2 emissions.

(D) The annual volume of biogenic CO_2 emissions from MSW combustion, in metric tons.

(xi) When ASTM methods D7459–08 and D6866–08 are used to determine the biogenic portion of the annual CO_2 emissions from a unit that co-fires biogenic (other than MSW) and non-biogenic fuels, you shall report the results of each quarterly sample analysis, expressed as a decimal fraction (e.g., if the biogenic fraction of the CO_2 emissions is 30 percent, report 0.30).

(3) Within 30 days of receipt of a written request from the Administrator, you shall submit explanations of the following:

(i) An explanation of how company records are used to quantify fuel consumption, if the Tier 1 or Tier 2 Calculation Methodology is used to calculate CO_2 emissions.

(ii) An explanation of how company records are used to quantify fuel consumption, if solid fuel is combusted and the Tier 3 Calculation Methodology is used to calculate CO_2 emissions.

(iii) An explanation of how sorbent usage is quantified.

(iv) An explanation of how company records are used to quantify fossil fuel consumption in units that uses CEMS to quantify CO_2 emissions and combusts both fossil fuel and biomass.

(v) An explanation of how company records are used to measure steam production, when it is used to calculate CO_2 mass emissions under § 98.33(a)(2)(iii) or to quantify solid fuel usage under § 98.33(c)(3).

(4) Within 30 days of receipt of a written request from the Administrator, you shall submit the verification data and information described in paragraphs (e)(2)(iii), (e)(2)(v), and (e)(2)(vii) of this section.

§ 98.37 Records that must be retained.

In addition to the requirements of § 98.3(g), you must retain the applicable records specified in §§ 98.34(f) and (g), 98.35(b), and 98.36(e).

§ 98.38 Definitions.

All terms used in this subpart have the same meaning given in the Clean Air Act and subpart A of this part.

TABLE C–1 TO SUBPART C OF PART 98—DEFAULT CO_2 EMISSION FACTORS AND HIGH HEAT VALUES FOR VARIOUS TYPES OF FUEL

Fuel type	Default high heat value	Default CO_2 emission factor
Coal and coke	mmBtu/short ton	kg CO_2/mmBtu
Anthracite	25.09	103.54
Bituminous	24.93	93.40
Subbituminous	17.25	97.02
Lignite	14.21	96.36
Coke	24.80	102.04
Mixed (Commercial sector)	21.39	95.26
Mixed (Industrial coking)	26.28	93.65
Mixed (Industrial sector)	22.35	93.91
Mixed (Electric Power sector)	19.73	94.38
Natural gas	mmBtu/scf	kg CO_2/mmBtu
Pipeline (Weighted U.S. Average)	1.028×10^{-3}	53.02
Petroleum products	mmBtu/gallon	kg CO_2/mmBtu
Distillate Fuel Oil No. 1	0.139	73.25
Distillate Fuel Oil No. 2	0.138	73.96
Distillate Fuel Oil No. 4	0.146	75.04
Residual Fuel Oil No. 5	0.140	72.93
Residual Fuel Oil No. 6	0.150	75.10
Still Gas	0.143	66.72
Kerosene	0.135	75.20
Liquefied petroleum gases (LPG)	0.092	62.98
Propane	0.091	61.46
Propylene	0.091	65.95
Ethane	0.096	62.64
Ethylene	0.100	67.43
Isobutane	0.097	64.91
Isobutylene	0.103	67.74
Butane	0.101	65.15
Butylene	0.103	67.73
Naphtha (<401 deg F)	0.125	68.02
Natural Gasoline	0.110	66.83
Other Oil (>401 deg F)	0.139	76.22
Pentanes Plus	0.110	70.02
Petrochemical Feedstocks	0.129	70.97

Ref. 13 1/2

Outlook

RE: Information for Table 2-3 in the attached document

From Feher, Peter (GE Vernova) <Peter1.Feher@ge.com>
Date Fri 11/22/2024 7:29 AM
To Reyes, Claudia <CSReyes@burbankca.gov>; Krishna Nand <krishnanand44@msn.com>
Cc Frank Messineo <FMessineo@BurbankCA.gov>; Bautista, Mariano <MBautista@burbankca.gov>; Willson, Nathan R (GE Vernova) <nathan.willson@ge.com>; Patel, Sagar B (GE Vernova) <sagar.B.patel@ge.com>

1 attachment (110 KB)
RE: Upgrades to the Magnolia Power Plant (2024);

Hi Claudia and Krishna
In responding to your request below, please find the tabular performance summary of pre and post upgrade max duct fired cases for the combined cycle:
These are the same cases that I have sent on June 28, 2024, for the gas turbine performances (see attached)
I leave it up to you which ambient condition you use in the permitting process.
Peter

Ambient Sweep - Pre Uprate Max Case		No peak, evap on, DB fired						
Ambient temp	°F	22.0	40.0	59.0	77.0	90.0	100.0	113.0
CC gross power	kW	334,661	326,689	316,095	311,351	302,065	297,796	292,517
CC net power	kW	327,661	319,689	309,095	304,351	295,065	290,796	285,517
Duct burner LHV	MMBtu/h	510	494	479	474	464	460	454
GT fuel LHV	MMBtu/h	1,675	1,630	1,572	1,552	1,508	1,488	1,465
Total fuel LHV	MMBtu/h	2,186	2,124	2,051	2,025	1,972	1,948	1,919
Total fuel HHV	MMBtu/h	2,426	2,357	2,277	2,248	2,188	2,162	2,130
CC gross HR LHV	Btu/kWh	6,531	6,501	6,490	6,505	6,528	6,541	6,561
CC net HR HHV	Btu/kWh	7,403	7,372	7,365	7,385	7,416	7,434	7,459
CC net effic. HHV	%	46.1%	46.3%	46.3%	46.2%	46.0%	45.9%	45.7%

Ambient Sweep - Post Uprate Max Case		No peak, evap on, DB fired						
Ambient temp	°F	22.0	40.0	59.0	77.0	90.0	100.0	113.0
CC gross power	kW	361,829	361,119	356,105	354,066	347,320	338,388	326,704
CC net power	kW	354,829	354,119	349,105	347,066	340,320	331,388	319,704
Duct burner LHV	MMBtu/h	410	399	391	386	396	420	439

GT fuel LHV	MMBtu/h	1,895	1,885	1,857	1,853	1,806	1,733	1,655
Total fuel LHV	MMBtu/h	2,305	2,284	2,248	2,239	2,202	2,153	2,093
Total fuel HHV	MMBtu/h	2,558	2,535	2,494	2,484	2,444	2,389	2,323
CC gross HR LHV	Btu/kWh	6,369	6,325	6,312	6,322	6,341	6,363	6,408
CC net HR HHV	Btu/kWh	7,208	7,157	7,145	7,158	7,182	7,210	7,267
CC net effic. HHV	%	47.3%	47.7%	47.8%	47.7%	47.5%	47.3%	47.0%

Ref 13 2/2

From: Patel, Sagar B (GE Vernova) <sagar.B.patel@ge.com>
Sent: Wednesday, November 20, 2024 6:36 PM
To: Feher, Peter (GE Vernova) <Peter1.Feher@ge.com>
Cc: Reyes, Claudia <CSReyes@burbankca.gov>; Frank Messineo <FMessineo@BurbankCA.gov>; Krishna Nand <krishnanand44@msn.com>; Bautista, Mariano <MBautista@burbankca.gov>; Willson, Nathan R (GE Vernova) <nathan.willson@ge.com>
Subject: FW: Information for Table 2-3 in the attached document
Importance: High

Adding @Feher, Peter (GE Vernova) to make sure right numbers are provided.

Best Regards,
Sagar

Sagar Patel
Gas Power

M +1 404-831-7039

GE VERNOVA

From: "Reyes, Claudia" <CSReyes@burbankca.gov>
Date: Wednesday, November 20, 2024 at 4:25 PM
To: GE Power <sagar.B.patel@ge.com>
Cc: "Bautista, Mariano" <MBautista@burbankca.gov>, Frank Messineo <FMessineo@burbankca.gov>, Krishna Nand <krishnanand44@msn.com>
Subject: EXT: FW: Information for Table 2-3 in the attached document

Hi Sagar,

Please refer to the emails below. Krishna is requesting the following information for MPP after the upgrades are implemented:

- Gross Plant Power Output

Ref. 14

Outlook

MPP Upgrades CF

From Reyes, Claudia <CSReyes@burbankca.gov>
Date Wed 11/27/2024 5:53 AM
To krishnanand44 <krishnanand44@msn.com>; Messineo, Frank <FMessineo@burbankca.gov>; Hsiao, Wendy <WHsiao@burbankca.gov>

Krishna,

Per our conversation yesterday, BWP is proposing to use an 84.9% capacity factor of the new unit capacity for the permit application.

Thank you

Claudia Reyes

Ref. 15

(Adopted August 4, 1989)(Amended December 21, 1990)(Amended July 19, 1991)
(Amended November 2, 2018)(Amended January 7, 2022)

RULE 1135. EMISSIONS OF OXIDES OF NITROGEN FROM ELECTRICITY GENERATING FACILITIES

(a) Purpose

The purpose of this rule is to reduce emissions of oxides of nitrogen (NO_x) from electric generating units at electricity generating facilities.

(b) Applicability

This rule shall apply to electric generating units at electricity generating facilities.

(c) Definitions

(1) ANNUAL CAPACITY FACTOR means the ratio between the measured heat input (in MMBtu) from fuel consumption to an electric generating unit during a calendar year and the potential heat input (in MMBtu) to the electric generating unit had it been operated for 8,760 hours during a calendar year at the permitted heat input rating, expressed as a percent. Annual capacity factor does not include heat input of the electric generating unit during an Emergency Phase of the California Energy Commission Energy Emergency Response Plan or a Governor-Declared State of Emergency or Energy Emergency.

(2) BACKUP UNIT means any NO_x emitting turbine which is used intermittently to produce energy on a demand basis, does not operate more than 1,300 hours per year, is not subject to 40 CFR Part 72, and was a NOx process unit prior to the facility becoming a former RECLAIM NOx facility.

(3) BOILER means any combustion equipment fired with liquid and/or gaseous fuel, which is primarily used to produce steam that is expanded in a turbine generator used for electric power generation.

(4) COGENERATION TURBINE means a gas turbine which is designed to generate electricity and useful heat energy at the same time (combined heat and power).

(5) COMBINED CYCLE GAS TURBINE means a gas turbine that recovers heat from the gas turbine exhaust gases for use in a heat recovery steam generator to generate additional electricity.

Ref. 16

Outlook

RE: MPP Regulatory Analysis - Subpart TTTT

From Messineo, Frank <FMessineo@burbankca.gov>
Date Wed 11/20/2024 1:15 PM
To krishnanand44 <krishnanand44@msn.com>; Reyes, Claudia <CSReyes@burbankca.gov>
Cc krishnanand44 <krishnanand44@msn.com>

This language seems to be the cost for the entire plant as it say facility not component. It would cost around $750M to build an entirely new plant of this capacity. The upgrades at $72M are less than 10% the cost of an entirely new facility.

Thanks,
Frank

From: krishna Nand <krishnanand44@msn.com>
Sent: Wednesday, November 20, 2024 1:09 PM
To: Reyes, Claudia <CSReyes@burbankca.gov>; Messineo, Frank <FMessineo@burbankca.gov>
Cc: krishnanand44 <krishnanand44@msn.com>
Subject: Re: MPP Regulatory Analysis - Subpart TTTT

Hi Claudia,

I have the following information relating to the Construction Costs. Hope this will be helpful in making the decision please.

Thanks,
Krishna Nand.

Construction means fabrication, erection, or installation of an affected facility.

- **§60.15 Reconstruction**

(b) "Reconstruction" means the replacement of components of an existing facility to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and

(2) It is technologically and economically feasible to meet the applicable standards set forth in this part.

(c) "Fixed capital cost" means the capital needed to provide all the depreciable components.

APPENDIX A-28

Historical MPP Emission Data for the Period August 2022 through July 2024

Appendix A-28 Historical MPP Emission Data for the Period August 2022 through July 2024

Month	Natural Gas, GT, Mscf	Natural Gas, DB, Mscf	CO, lb	NOx, lb	SO2, lb	PM10, lb
01-Aug-22	1072416.258	11086.58978	2179.53324	5541.92533	671.4809	5640.77
01-Sep-22	914224.7071	5855.35084	2123.32167	4867.29959	571.1106	4787.18
01-Oct-22	976136.7866	337.64679	2175.86917	5246.8028	608.5463	5075.98
01-Nov-22	983605.6233	1.86578	1998.47392	5158.51561	617.0205	5112.79
01-Dec-22	926787.556	467.43317	2301.20818	5081.80963	588.7222	4820.24
01-Jan-23	977100.0027	5.86113	2304.37615	5464.97493	623.0297	5079
01-Feb-23	910032.9504	3.94863	1856.94396	4770.14192	566.3059	4730.37
01-Mar-23	777595.8584	3.7087	2466.14388	4099.0931	481.55524	4041.97
01-Apr-23	876627.3246	1.93754	1968.35412	4564.91437	540.0102	4556.72
01-May-23	838890.7831	31.49419	1915.95739	4493.80963	520.7875	4360.74
01-Jun-23	816026.9247	352.99596	2260.08459	4386.41524	508.22485	4243.82
01-Jul-23	1033972.316	4102.43717	2208.34079	5238.54919	647.441	5399.14
Total 22-23, lb/YR			**25758.6**	**58914.3**	6944.2	**57848.7**
Total 22-23, ton/YR		**tons/yr**	**12.9**	**29.5**	**3.5**	**28.9**
01-Aug-23	1010637.077	13717.03229	2150.21956	5250.7577	634.4407	5335.39
01-Sep-23	872429.4757	11770.09342	2351.66152	4635.98453	548.27983	4605.33
01-Oct-23	870899.0123	572.26194	2019.03399	4733.35727	540.1934	4530.36
01-Nov-23	956557.2788	2.01586	2008.16787	5135.71855	591.2091	4972.2
01-Dec-23	952645.0387	3599.97194	2343.53257	5193.95899	591.27549	4973.39
01-Jan-24	1116350.584	957.68281	2245.31617	5854.6735	696.4047	5808.52
01-Feb-24	979258.5479	215.4539	2003.07025	5111.69314	610.6737	5091.48
01-Mar-24	778268.2959	744.71474	2240.69998	4275.6987	482.6748	4049.9
01-Apr-24	892199.3271	41.99222	1933.498	4722.85966	551.2727	4637.9
01-May-24	886510.9198	0	1956.37179	4816.90123	548.0935	4608.08
01-Jun-24	848166.2388	1392.43024	2150.1143	4705.20959	525.8882	4417.1
01-Jul-24	1106022.988	13201.68148	2221.87138	5850.19632	684.96545	5828.12

Notes: Unit lb/MMscf

PM10 GT EF	**5.198**
PM10 DB EF	**5.985**

Total 22-23, lb/YR		25623.6	60287	7005.4	58857.8
Total 22-23, ton/YR	**tons/yr**	**12.8**	**30.1**	**3.5**	**29.4**
Average of 2022-2024		12.9	29.8	3.5	29.2

APPENDIX A-29

NO_X Annual Emissions during the 1st Year of MPP Operation after Upgrade with Capacity Factor of 84.9% included in the Emission Calculations for Non-recommissioning Operation

Appendix A-29

NOx Annual Emissions during the 1st Year of MPP Operation after Upgrade
Capacity Factor of 84.9% Included in the Emission Calculations
for non-recommissioing Operation

Input Data		
Capacity Factor (CF), Ref. 15	84.9	percent
	0.849	
Annual NOx Emissions without Capacity Factor (from Appendix A-21B)		
Total NOx Emissions	162,258	lb
NOx Emissions during recommissioing	3146	lb
NOx Emissions during non-recommissioing	159,112	lb
Annual NOx Emissions with Capacity Factor		
NOx Emissions during recommissioing	3146	lb
NOx Emissions during non-recommissioing with CF	135,086	lb
Total NOx Emissions with CF	**138,232**	**lb**
	69.1	**ton**
Annual CO Emissions without Capacity Factor (from Appendix A-21B)		
Total CO Emissions	129,468	lb
CO Emissions during recommissioing	8863	lb
CO Emissions during non-recommissioing	120,605	lb
Annual Emissions with Capacity Factor		
CO Emissions during recommissioing	8863	lb
CO Emissions during non-recommissioing with CF	102,394	lb
Total CO Emissions with CF	**111,257**	**lb**
	55.6	**ton**
Annual VOC Emissions without Capacity Factor (from Appendix A-21B)		
Total VOC Emissions	48,434	lb
VOC Emissions during recommissioing	1236	lb
VOC Emissions during non-recommissioing	47,198	lb
Annual Emissions with Capacity Factor		
VOC Emissions during recommissioing	1236	lb
VOC Emissions during non-recommissioing with CF	40,071	lb
Total VOC Emissions with CF	**41,307**	**lb**
	20.7	**ton**

Annual PM10 Emissions without Capacity Factor (from Appendix A-21B)		
Total PM10 Emissions	90,240	lb
PM10 Emissions during recommissioing	975	lb
PM10 Emissions during non-recommissioing	89,265	lb
Annual Emissions with Capacity Factor		
PM10 Emissions during recommissioing	975	lb
PM10 Emissions during non-recommissioing with CF	75,786	lb
Total PM10 Emissions with CF	**76,761**	**lb**
	38.4	**ton**
Annual SOx Emissions without Capacity Factor (from Appendix A-21B)		
Total SOx Emissions	10,399	lb
SOx Emissions during recommissioing	162	lb
SOx Emissions during non-recommissioing	10,237	lb
Annual Emissions with Capacity Factor		
SOx Emissions during recommissioing	162	lb
SOx Emissions during non-recommissioing with CF	8,691	lb
Total SOx Emissions with CF	**8,853**	**lb**
	4.4	**ton**

APPENDIX A-40
Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions, Only Gas Turbine (Existing Permit)
Gas Turbine Normal Operation – Hourly Emissions, PM10 and SOX, Reduced EF

Appendix A-40
Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions, Only Gas Turbine (Existing Permit)
Gas Turbine Normal Operation - Hourly Emissions, PM10 and SOx, Reduced EF

Natural Gas Used by the Combustion Turbine

Device ID Number: Upgraded GE 7FA
No. of Devices: One Gas Turbine

Process Equipment Description: GE 7FA with DLN
Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction, CO Catalyst, and Dry-Low-NOx Combustor

Parameter Symbols/Names	Values	
Fuel burned per hour (one GT)	1.702	MMscf/hr
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Process Operation Schedule	24	hrs/day

Criteria Species Name	Hourly Max Emissions (lb/hr)
Oxides of Nitrogen (NOx)	0.00
Carbon Monoxide (CO)	0.00
Volatile Organic Compounds (VOC)	0.00
Ammonia (NH_3)	0.00
Particulate Matter Ten Microns and Less (PM10)	8.85
Sulfur Oxides (SO_2)	1.02

Criteria Species Name	Hourly Max Emissions (grams/sec)
NOx	0.000
CO	0.000
VOC	0.000
NH_3	0.000
PM_{10}	1.115
SO_2	0.129

Emission (g/sec) = Emission (lb/hr) x 453.592/3600

Appendix A-40
Magnolia Power Plant Permit Upgrade Project 2024
Development Of Criteria Pollutant Emission Factors (Existing Permit)
Gas Turbine Normal Operation - Hourly Emissions, PM10 and SOx, Reduced EF

Natural Gas Used by the Combustion Turbine

Input Data				
		Value	**Units**	**Reference**
a	GT Load	100	percent	4
b.	Heat Input to GT, HHV	1787	MMBtu/hr HHV	2
c.	NOx Concentration		ppmvd @ 15% O_2	2
d.	CO Concentration		ppmvd @ 15% O_2	2
e.	VOC Concentration		ppmvd @ 15% O_2	2
f.	NH_3 Slip		ppmvd @ 15% O_2	2
g1	Original PM10 Emission Factor	0.0066	lb/MMBtu	2
g2	Reduced PM10 Emission Factor =[0.0088 - (0.25 x 0.0066)] = 0.00495	0.00495	lb/MMBtu	see Sec 3
h.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
i.	Volume of gas at STP for 1 lb-mol of gas	385	scf/lb-mol	2
j.	Hours of operation	24	hrs/day	Maximum
k.	Annual Number of Hours of Operation	8,760	hrs/yr	Maximum
l.	Reduced SOx Emission Factor	0.60	lb/MMscf	5

Calculate Maximum Hourly Fuel Consumption Rate (MMscf/hr) in Terms of HHV

Maximum Hourly Fuel Consumption Rate (MMscf/hr) = Heat Input (MMBtu/hr HHV) / NG Heating Value (Btu/scf HHV)		
Maximum Hourly Fuel Consumption Rate (MMscf/hr) = 1787 (MMBtu/hr) / 1050 (Btu/scf)	1.702	MMscf/hr

Calculate SOx Emission Rate

SOx Emission Rate = 0.6 lb/MMscf x 1.702 MMscf/hr	1.02	lb/hr

Calculate PM10 Emission Rate

PM10 Emission Rate = 0.00495 lb/MMBtu x 1787 MMBtu/hr	8.85	lb/hr

Appendix A-40
Magnolia Power Plant Permit Upgrade Project 2024
Development Of Criteria Pollutant Emission Factors (Existing Permit)
Gas Turbine Normal Operation - Hourly Emissions, PM10 and SOx, Reduced EF

Natural Gas Used by the Combustion Turbine

Calculate GT Exhaust Rate			
GT Calculated Exhaust Rate			
GT Exhaust Rate, Dry (MMScf/hr) = GT Rated heat input (MMBtu/hr) x 8710 x [20.9/(20.9-15.0)]/1000000		55.14	MMscf/hr
GT Exhaust Rate, Dry (MMScf/hr) = 1787 MMBtu/hr x 8710 x [20.9/(20.9-15.0)]/1000000			
Calculation of Emission Factors for NOx, CO, VOC and NH_3			
Molecular Weight of NOx (NO2)		46	lb/lb-mole
Molecular Weight of CO		28	lb/lb-mole
Molecular Weight of VOC (CH4)		16	lb/lb-mole
Molecular Weight of NH3		17	lb/lb-mole
NOx Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack NOx Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
NOx Hourly Emission at 15% O2, dry = 55.14 x x 46/385	lb/hr	0.00	lb/hr
NOx Hourly Emission at 15% O2, dry = 0 lb/hr/1.702 MMscf/hr	lb/MMscf	0.00	lb/MMscf
CO Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack CO Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
CO Hourly Emission at 15% O2, dry = 55.14 x x 28/385	lb/hr	0.00	lb/hr
CO Hourly Emission at 15% O2, dry = 0 lb/hr/1.702 MMscf/hr	lb/MMscf	0.00	lb/MMscf
VOC Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack VOC Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
VOC Hourly Emission at 15% O2, dry = 55.14 x x 16/385	lb/hr	0.00	lb/hr
VOC Hourly Emission at 15% O2, dry = 0 lb/hr/1.702 MMscf/hr	lb/MMscf	0.00	lb/MMscf
NH_3 Hourly Emission at 15%, dry = Stack exhaust at 15% dry, MMscf/hr x Stack NH3 Conc ppm x MW lb/lb-mole/(385 scf/lb-mole)			
NH3 Hourly Emission at 15% O2, dry = 55.14 x x 17/385	lb/hr	0.00	lb/hr
NH3 Hourly Emission at 15% O2, dry = 0 lb/hr/1.702 MMscf/hr	lb/MMscf	0.00	lb/MMscf

APPENDIX A-41
Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions (Existing Permit after Upgrade)
Normal Operation Only Duct Burner (Hourly Emissions), PM10 and SOx, Reduced EF

Appendix 41
Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions (Existing Permitafter Upgrade)
Normal Operation Only Duct Burner (Hourly Emissions), PM10 and SOx, Reduced EF

Natural Gas Used by the Combustion Turbine

Device ID Number: Upgraded GE 7FA
No. of Devices: One Gas Turbine

Process Equipment Description: GE 7FA with DLN
Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction, CO Catalyst, and Dry-Low-NOx Combustor

Parameter Symbols/Names	Values	
Fuel burned per hour (one GT)	0.555	MMscf/hr
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Process Operation Schedule	24	hrs/day

Criteria Species Name	Hourly Max Emissions (lb/hr)
Oxides of Nitrogen (NOx)	0.00
Carbon Monoxide (CO)	0.00
Volatile Organic Compounds (VOC)	0.00
Ammonia (NH_3)	0.00
Particulate Matter Ten Microns and Less (PM10)	3.32
Sulfur Oxides (SO_2)	0.33

Criteria Species Name	Hourly Max Emissions (grams/sec)
NOx	0.000
CO	0.000
VOC	0.000
NH_3	0.000
PM_{10}	0.418
SO_2	0.042

Emission (g/sec) = Emission (lb/hr) x 453.592/3600

Appendix 41
Magnolia Power Plant Permit Upgrade Project 2024
Development Of Criteria Pollutant Emission Factors (Existing Permit)
Normal Operation Only Duct Burner (Hourly Emissions), PM10 and SOx, Reduced EF

Natural Gas Used by the Combustion Turbine

Input Data

		Value	Units	Reference
a	DB Load	100	percent	4
b.	Heat Input to DB, HHV	583	MMBtu/hr HHV	2
c.	NOx Concentration		ppmvd @ 15% O_2	2
d.	CO Concentration		ppmvd @ 15% O_2	2
e.	VOC Concentration		ppmvd @ 15% O_2	2
f.	NH_3 Slip		ppmvd @ 15% O_2	2
g1	Original PM10 Emission Factor	0.0076	lb/MMBtu	2
g2	Reduced PM10 Emission Factor = [0.0076 - (0.25 x 0.0076)] = 0.0057	0.0057	lb/MMBtu	see Section 3
h.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
i.	Volume of gas at STP for 1 lb-mol of gas	385	scf/lb-mol	2
j.	Hours of operation	24	hrs/day	Maximum
k.	Annual Number of Hours of Operation	8,760	hrs/yr	Maximum
l.	Reduced SOx Emission Factor	0.60	lb/MMscf	5

Calculate Maximum Hourly Fuel Consumption Rate (MMscf/hr) in Terms of HHV

Maximum Hourly Fuel Consumption Rate (MMscf/hr) = Heat Input (MMBtu/hr HHV) / NG Heating Value (Btu/scf HHV)		
Maximum Hourly Fuel Consumption Rate (MMscf/hr) = 583 (MMBtu/hr) / 1050 (Btu/scf)	0.555	MMscf/hr

Calculate SOx Emission Rate

SOx Emission Rate = 0.6 lb/MMscf x 0.555 MMscf/hr	0.33	lb/hr

Calculate PM10 Emission Rate

PM10 Emission Rate = 0.0057 lb/MMBtu x 583 MMBtu/hr	3.32	lb/hr

Appendix 41
Magnolia Power Plant Permit Upgrade Project 2024
Criteria Pollutant Emissions (Existing Permitafter Upgrade)
Normal Operation Only Duct Burner (Hourly Emissions), PM10 and SOx, Reduced EF

Natural Gas Used by the Combustion Turbine

Device ID Number: Upgraded GE 7FA
No. of Devices: One Gas Turbine

Process Equipment Description: GE 7FA with DLN
Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction, CO Catalyst, and Dry-Low-NOx Combustor

Parameter Symbols/Names	Values	
Fuel burned per hour (one GT)	0.555	MMscf/hr
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Process Operation Schedule	24	hrs/day

Criteria Species Name	Hourly Max Emissions (lb/hr)
Oxides of Nitrogen (NOx)	0.00
Carbon Monoxide (CO)	0.00
Volatile Organic Compounds (VOC)	0.00
Ammonia (NH_3)	0.00
Particulate Matter Ten Microns and Less (PM10)	3.32
Sulfur Oxides (SO_2)	0.33

Criteria Species Name	Hourly Max Emissions (grams/sec)
NOx	0.000
CO	0.000
VOC	0.000
NH_3	0.000
PM_{10}	0.418
SO_2	0.042

Emission (g/sec) = Emission (lb/hr) x 453.592/3600

APPENDIX A-42
Magnolia Power Plant Permit Modification Project 2024
Development of Criteria Pollutant Emission Factors (Existing Permit)
GT+ DB (Peak) Normal Operation (Hourly Emissions), PM10 and SOx, Reduced EF

Appendix A-42
Magnolia Power Plant Permit Modification Project 2024
Criteria Pollutant Emissions (Existing Permit)
GT+ DB (Peak) Normal Operation (Hourly Emissions), PM10 and SOx, Reduced EF

Natural Gas Used by the GT and DB

Device ID Number: GE 7FA
No. of Devices: One Gas Turbine

Process Equipment Description: GE 7FA with DLN
Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction, CO Catalyst, and Dry-Low-NOx Combustor

Parameter Symbols/Names	**Values**	
Fuel burned per hour (one GT + one DB)	2.257	MMscf/hr
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Process Operation Schedule	12	hrs/day

Criteria Species Name	**Hourly Max Emissions (lb/hr)**	**Hourly Max Emissions (grams/sec)**
Oxides of Nitrogen (NOx)	0.00	0.000
Carbon Monoxide (CO)	0.00	0.000
Volatile Organic Compounds (VOC)	0.00	0.000
Ammonia (NH_3)	0.00	0.000
Particulate Matter Ten Microns and Less (PM10)	12.17	1.533
Sulfur Oxides (SO_2)	1.35	0.170

Emission (g/sec) = Emission (lb/hr) x 453.592/3600

Appendix A-42
Magnolia Power Plant Permit Modification Project 2024
Development Of Criteria Pollutant Emission Factors (ExistingPermit)
GT+ DB (Peak) Normal Operation (Hourly Emissions), PM10 and SOx, Reduced EF

Natural Gas Used by the GT and DB

Input Data

		Value	Units	Reference
a	Duct Burner (DB) Load	100	percent	4
b.	GT Load	100	percent	4
c.	Heat Input to GT, HHV	1787	MMBtu/hr HHV	2
d.	Heat Input to Duct Burner, HHV	583	MMBtu/hr HHV	2
e.	Heat Input to GT and Duct Burner Combined = 1787 + 583 HHV	2370	MMBtu/hr HHV	Calculated
f.	NOx Concentration		ppmvd @ 15% O_2	2
g.	CO Concentration		ppmvd @ 15% O_2	2
h.	VOC Concentration		ppmvd @ 15% O_2	2
i.	NH_3 Slip		ppmvd @ 15% O_2	2
j1.	Original PM10 Emission Factor (Duct Burner)	0.0076	lb/MMBtu	2
j2.	Reduced PM10 Emission Factor (Duct Burner) =[0.0076 - (0.25 x 0.0076)] = 0.0057	0.00570	lb/MMBtu	see Section 3
k1.	Original PM10 Emission Factor (GT)	0.0066	lb/MMBtu	2
k2.	Reduced PM10 Emission Factor (GT)	0.00495	lb/MMBtu	see Section 3
m.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
n.	Volume of gas at STP for 1 lb-mol of gas	385	scf/lb-mol	2
o.	SOx Emission Factor	0.60	lb/MMscf	5

Calculate Maximum Hourly Fuel Consumption Rate (MMscf/hr) in Terms of HHV

Maximum Hourly Fuel Consumption Rate (MMscf/hr) = Heat Input (MMBtu/hr HHV) / NG Heating Value (Btu/scf HHV)

Maximum Hourly Fuel Consumption Rate (MMscf/hr) = 2370 (MMBtu/hr) / 1050 (Btu/scf)	2.257	MMscf/hr

Calculate SOx Emission Rate

SOx Emission Rate = 0.6 lb/MMscf x 2.257 MMscf/hr	1.35	lb/hr

Calculate PM10 Emission Rate, GT

PM10 Emission Rate = 0.00495 lb/MMBtu x 1787 MMBtu/hr	8.85	lb/hr

Calculate PM10 Emission Rate, Duct Burner

PM10 Emission Rate = 0.0057 lb/MMBtu x 583 MMBtu/hr	3.32	lb/hr

PM10 Emission Rate, Duct Burner + GT = 8.85 + 3.32 lb/hr	12.17	lb/hr

APPENDIX A-43
Magnolia Power Project Permit Modification Project 2024
Hourly Emissions Summary, Current Existing Permit, PM10, SOx Reduced EF

Appendix A-43
Magnolia Power Project Permit Modification Project 2024
Hourly Emissions Summary, Current Existing Permit, PM10, SOx Reduced EF

Input Data				
		Value	**Units**	**Reference**
a	NOx Emissions from GT, Normal Operation	13.18	lb/hr	Ref. 2
b.	CO Emissions from GT, Normal Operation	8.02	lb/hr	Ref. 2
c.	VOC Emissions from GT, Normal Operation	4.58	lb/hr	Ref. 2
d.	PM10 Emissions from GT, Normal Operation	8.85	lb/hr	App A-40
e.	SOx Emissions from GT, Normal Operation	1.02	lb/hr	App A-40
f.	NOx Emissions from Duct Burner, Normal Operation	4.30	lb/hr	Ref. 2
g.	CO Emissions from Duct Burner, Normal Operation	2.62	lb/hr	Ref. 2
h.	VOC Emissions from Duct Burner, Normal Operation	1.50	lb/hr	Ref. 2
i.	PM10 Emissions from Duct Burner, Normal Operation	3.32	lb/hr	App A-41
j.	SOx Emissions from Duct Burner, Normal Operation	0.33	lb/hr	App A-41
k.	NOx Emissions from Gas Turbine and Duct Burner, Peak Operation	17.48	lb/hr	Ref. 2
l.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	10.64	lb/hr	Ref. 2
m.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.08	lb/hr	Ref. 2
n.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	12.17	lb/hr	App A-42
o.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.35	lb/hr	App A-42
p.	**Startup Duration**	6	hours	Ref. 2
q.	NOx Emissions, Startup	440	lb/event	Ref. 2
r.	CO Emissions, Startup	500	lb/event	Ref. 2
s.	VOC Emissions, Startup	30	lb/event	Ref. 2
t.	PM10 Emissions, Startup	70.74	lb/event	Ref. 2
u.	SOx Emissions, Startup	7.68	lb/event	Ref. 2
v.	**Shutdown Duration**	0.50	hour	Ref. 2
w,	NOx Emissions, Shutdown	25	lb/event	Ref. 2
x.	CO Emissions, Shutdown	120	lb/event	Ref. 2
y.	VOC Emissions, Shutdown	17	lb/event	Ref. 2
z.	PM10 Emissions, Shutdown	5.90	lb/event	Ref. 2
aa.	SOx Emissions, Shutdown	0.64	lb/event	Ref. 2

APPENDIX A-44
Magnolia Power Project Permit Modification Project 2024
Daily Emissions Based on Current Existing Permit, PM10, SOx Reduced EF

Appendix A-44
Magnolia Power Project Permit Modification Project 2024
Daily Emissions Based on Current Existing Permit PM10, SOx Reduced EF

Input Data				
		Value	**Units**	**Reference**
a	NOx Emissions from GT, Normal Operation	13.18	lb/hr	Ref. 2
b.	CO Emissions from GT, Normal Operation	8.02	lb/hr	Ref. 2
c.	VOC Emissions from GT, Normal Operation	4.58	lb/hr	Ref. 2
d.	PM10 Emissions from GT, Normal Operation	8.85	lb/hr	App. A-40
e.	SOx Emissions from GT, Normal Operation	1.02	lb/hr	App. A-40
f.	NOx Emissions from Gas Turbine and Duct Burner, Peakin Operation	17.48	lb/hr	Ref. 2
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	10.64	lb/hr	Ref. 2
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.08	lb/hr	Ref. 2
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	12.17	lb/hr	App. A-42
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.35	lb/hr	App. A-42
k.	Startup Duration	6	hours	Ref. 2
l.	NOx Emissions, Startup	440	lb/event	Ref. 2
m.	CO Emissions, Startup	500	lb/event	Ref. 2
n.	VOC Emissions, Startup	30	lb/event	Ref. 2
o.	PM10 Emissions, Startup	70.74	lb/event	Ref. 2
p.	SOx Emissions, Startup	7.68	lb/event	Ref. 2
q.	Shutdown Duration	0.50	hour	Ref. 2
r.	NOx Emissions, Shutdown	25	lb/event	Ref. 2
s.	CO Emissions, Shutdown	120	lb/event	Ref. 2
t.	VOC Emissions, Shutdown	17	lb/event	Ref. 2
u.	PM10 Emissions, Shutdown	5.90	lb/event	Ref. 2
v.	SOx Emissions, Shutdown	0.64	lb/event	Ref. 2
w.	Number of hours in a day	24	hrs/day	
x.	Permitted number of hours of duct burner operation in a day	12	hrs/day	Calculated
y.	Maximum number of GT operation without duct burner	12	hrs/day	Calculated
z.	Duration of one start	6	hrs/event	
aa.	Duration of one shutdown	0.5	hrs/event	
bb.	Duration of only GT operation with one start, one shutdown and 12 hours of duct burner operation	5.5	hrs/day	Calculated

Note: The scenario which results in the highest daily emissions is assumed for each pollutant. For NOx, CO and VOC maximum daily emissions are calculated assuming 1 startup, 1 shutdown, 12 hours of normal operation with duct burner and the remaining time in normal operation without duct burner (5.5 hrs). For PM10 and SOx, maximum daily emissions are based on 12 hrs/day normal operation without the duct burner and the remaining operation with the duct burner (12 hrs/day).

Calculation of Maximum Daily Emissions

NOx	= 440 lb/start + 25 lb/shutdown + (12 hrs x 17.48 lb/hr) + (5.5 hrs x 13.18 lb/hr)	**747.3**	**lb/day**
CO	= 500 lb/start + 120 lb/shutdown + (12 hrs x 10.64 lb/hr) + (5.5 hrs x 8.02 lb/hr)	**791.8**	**lb/day**
VOC	= 30 lb/start + 17 lb/shutdown + (12 hrs x 6.08 lb/hr) + (5.5 hrs x 4.58 lb/hr)	**145.2**	**lb/day**
PM10	= (12 hrs x 12.17 lb/hr) + (12 hrs x 8.85 lb/hr)	**252.2**	**lb/day**
SOx	= (12 hrs x 1.35 lb/hr) + (12 hrs x 1.02 lb/hr)	**28.4**	**lb/day**

APPENDIX A-45
Magnolia Power Project Permit Modification Project 2024
Monthly Emissions Based on Current Existing Permit, PM10, SOx Reduced EF

Appendix A-45
Magnolia Power Project Permit Modification Project 2024
Monthly Emissions Based on Current Existing Permit, PM10, SOx Reduced EF

Input Data

		Value	Units	Reference
a	NOx Emissions from GT, Normal Operation	13.18	lb/hr	Ref. 2
b.	CO Emissions from GT, Normal Operation	8.02	lb/hr	Ref. 2
c.	VOC Emissions from GT, Normal Operation	4.58	lb/hr	Ref. 2
d.	PM10 Emissions from GT, Normal Operation	8.85	lb/hr	App A-40
e.	SOx Emissions from GT, Normal Operation	1.02	lb/hr	App A-40
f.	NOx Emissions from Gas Turbine and Duct Burner, Peak Operation	17.48	lb/hr	Ref. 2
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	10.64	lb/hr	Ref. 2
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.08	lb/hr	Ref. 2
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	12.17	lb/hr	App A-42
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.35	lb/hr	App A-42
k.	Startup Duration	6	hours	Ref. 2
l.	NOx Emissions, Startup	440	lb/event	Ref. 2
m.	CO Emissions, Startup	500	lb/event	Ref. 2
n.	VOC Emissions, Startup	30	lb/event	Ref. 2
o.	PM10 Emissions, Startup	70.74	lb/event	Ref. 2
p.	SOx Emissions, Startup	7.68	lb/event	Ref. 2
q.	Shutdown Duration	0.50	hour	Ref. 2
r.	NOx Emissions, Shutdown	25	lb/event	Ref. 2
s.	CO Emissions, Shutdown	120	lb/event	Ref. 2
t.	VOC Emissions, Shutdown	17	lb/event	Ref. 2
u.	PM10 Emissions, Shutdown	5.90	lb/event	Ref. 2
v.	SOx Emissions, Shutdown	0.64	lb/event	Ref. 2
w.	Number of hours in a month	720	hrs/month	
x.	Number of starts in a month	5	starts/month	Ref. 2
y.	Duration of one start	6	hrs/event	Ref. 2
z.	Number of shutdowns per month	5	shutdowns/month	Ref. 2
aa.	Duration of one shutdown	0.5	hrs/event	Ref. 2
bb.	Number of hours in five startups	30	hrs/month	Calculated
cc.	Number of hours in five shutdowns	2.5	hrs/month	Calculated
dd.	Number of hours of normal operation with duct burner	240	hrs/month	Ref. 2
ee.	Maximum number of GT operation without duct burner	480	hrs/month	Calculated
ff.	Duration of only GT operation with five start, five shutdown, and 240 hours of duct burner operation	447.5	hrs/month	Calculated

Note: The scenario which results in the highest monthly emissions is assumed for each pollutant. For CO and VOC maximum monthly emissions are calculated with 5 startup, 5 shutdown, 240 hours of normal operation with duct burner, and the remaining time in normal operation without duct burner (447.5 hrs). For PM10 and SOx, monthly emissions are based on 240 hrs/month normal operation with the duct burner and the remaining operation without the duct burner (480 hours).

Calculation of Maximum Monthly Emissions - Duct Burner Operation 240 Hours in the Month

CO	= (500 lb x 5 starts) + (120 lb x 5 shutdowns)+ (240 hrs x 10.64 lb/hr) + (447.5 hrs x 8.02 lb/hr)	**9,243**	**lb/month**
VOC	= (30 lb x 5 starts) + (17 lb x 5 shutdowns)+ (447.5 hrs x 4.58 lb/hr) + (240 hrs x 6.08 lb/hr)	**3,744**	**lb/month**
PM10	= (240 hrs x 12.17 lb/hr) + (480 hrs x 8.85 lb/hr)	**7,169**	**lb/month**
SOx	= (240 hrs x 1.35 lb/hr) + (480 hrs x 1.02 lb/hr)	**814**	**lb/month**

APPENDIX A-46
Magnolia Power Project Permit Modification Project 2024
Annual Emissions Based on Current Existing Permit, PM10, SOx Reduced EF

Appendix A-46
Magnolia Power Project Permit Modification Project 2024
Annual Emissions Based on Current Existing Permit, PM10, SOx Reduced EF

Input Data				
a	NOx Emissions from GT, Normal Operation	13.18	lb/hr	Ref. 2
b.	CO Emissions from GT, Normal Operation	8.02	lb/hr	Ref. 2
c.	VOC Emissions from GT, Normal Operation	4.58	lb/hr	Ref. 2
d.	PM10 Emissions from GT, Normal Operation	8.85	lb/hr	App A-40
e.	SOx Emissions from GT, Normal Operation	1.02	lb/hr	App A-40
f.	**NOx Emissions from Gas Turbine and Duct Burner, Peak Operation**	17.48	lb/hr	Ref. 2
g.	CO Emissions from Gas Turbine and Duct Burner, Peaking Operation	10.64	lb/hr	Ref. 2
h.	VOC Emissions from Gas Turbine + Duct Burner, Peaking Operation	6.08	lb/hr	Ref. 2
i.	PM10 Emissions from Gas Turbine + Duct Burner, Peaking Operation	12.17	lb/hr	App A-42
j.	SOx Emissions from Gas Turbine + Duct Burner, Peaking Operation	1.35	lb/hr	App A-42
k.	**Startup Duration**	6	hours	Ref. 2
l.	NOx Emissions, Startup	440	lb/event	Ref. 2
m.	CO Emissions, Startup	500	lb/event	Ref. 2
n.	VOC Emissions, Startup	30	lb/event	Ref. 2
o.	PM10 Emissions, Startup	70.74	lb/event	Ref. 2
p.	SOx Emissions, Startup	7.68	lb/event	Ref. 2
q.	**Shutdown Duration**	0.50	hour	Ref. 2
r.	NOx Emissions, Shutdown	25	lb/event	Ref. 2
s.	CO Emissions, Shutdown	120	lb/event	Ref. 2
t.	VOC Emissions, Shutdown	17	lb/event	Ref. 2
u.	PM10 Emissions, Shutdown	5.90	lb/event	Ref. 2
v.	SOx Emissions, Shutdown	0.64	lb/event	Ref. 2
w.	**Number of hours in a year**	8,760	hrs/year	
x.	Capacity Factor	95	percent	Ref. 2
y.	Hours per year in operation	8,322	hrs/year	Calculated
z.	Number of starts per month	5	starts/month	Ref. 2
aa.	Number of starts in a year	60	starts/year	Calculated
bb.	Duration of one start	6	hrs/event	Ref. 2
cc.	Number of shutdowns per month	5	shutdowns/month	Ref. 2
dd.	Number of shutdowns per year	60	shutdowns/year	Calculated
ee.	Duration of one shutdown	0.5	hrs/event	Ref. 2
ff.	Number of hours in 60 startups (annual)	360	hrs/year	Calculated
gg.	Number of hours in 60 shutdowns (annual)	30	hrs/year	Calculated
hh.	Number of hours of normal operation with duct burner	1,000	hrs/year	Ref. 2
ii.	Hours in normal opeartion without DB, 60 start & 60 shutdown = (8322 - 1000 -360 - 30)	6,932	hrs/year	Calculated
jj.	Maximum number of GT operation without duct burner = (8322 - 1000)	7,322	hrs/year	Calculated

Note: The scenario which results in the highest annual emissions is assumed for each pollutant. For NOx, CO and VOC maximum annual emissions are calculated assuming 60 startup, 60 shutdown, 1,000 hours of normal operation with duct burner and the remaining time in normal operation without duct burner (6,932 hrs). For PM10 and SOx, annual emissions are based on 1,000 hrs/month normal operation with the duct burner and the remaining operation without the duct burner (7,322 hours).

Calculation of Annual Emissions for NOx, CO and VOC			
NOx	= (440 lb x 60 starts) + (25 lb x 60 shutdowns)+ (1000 hrs x 17.48 lb/hr) + (6932 hrs x 13.18 lb/hr)	136,744	lb/year
CO	= (500 lb x 60 starts) + (120 lb x 60 shutdowns)+ (1000 hrs x 10.64 lb/hr) + (6932 hrs x 8.02 lb/hr)	103,435	lb/year
VOC	= (30 lb x 60 starts) + (17 lb x 60 shutdowns)+ (1000 hrs x 6.08 lb/hr) + (6932 hrs x 4.58 lb/hr)	40,649	lb/year
Calculation of Annual Emissions for PM10, SOx			
PM10	= (1000 hrs x 12.17 lb/hr) + (7322 hrs x 8.85 lb/hr)	76,970	lb/year
SOx	= (1000 hrs x 1.35 lb/hr) + (7322 hrs x 1.02 lb/hr)	8,818	lb/year

APPENDIX A-50
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 1A

Appendix A-50
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 1A

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	2.861	MMscf/event
F_m = Fuel burned per hour	0.572	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	5	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	520	104.00	13.104
Carbon Monoxide (CO)	1966	393.20	49.542
Volatile Organic Compounds (VOC)	315	63.00	7.938
Particulate Matter Ten Microns and Less (PM10)	18	3.60	0.454
Sulfur Oxides (SO_2)	1.72	0.34	0.043

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-50
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioing Phase 1A

		Value	Units	Reference
Input Data				
		Value	**Units**	**Reference**
a.	Commissioning Phase	1A		**App A-10**
b.	CTG Load	10	kW	**App A-10**
c.	Runtime of the Phase	5	hour	**App A-10**
d.	Heat input during the task/event	3004	MMBtu/hr HHV	Calculated
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	
f.	Heat input during the task/event, MMscf	2.861	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**1.72**	lb/event	Calculated
h.	NO_x Emissions during the event	**520**	lb/event	**App A-10**
i.	CO Emissions during the event	**1966**	lb/event	**App A-10**
j.	VOC Emissions during the event	**315**	lb/event	**App A-10**
k.	PM10 Emissions during the event	**18**	lb/event	**App A-10**
l.	Stack exhaust flow rate	514,587	ACFM	**App A-10**
m.	Stack exhaust temperature	170	^{o}F	**App A-10**

Appendix A-50
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 1A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	1A	---	App A-10
b.	Stack Exhast Flow	514,587	ACFM	App A-10
c.	Stack Exit Temperature	**170**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	170	630	514,587

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	30.25	9.22	5.80	150	45.70	349.82

APPENDIX A-51
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 1B+1C

Appendix A-51
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioing Phase 1B+1C

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	0.922	MMscf/event
F_m = Fuel burned per hour	0.922	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	1.0	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	95	95.00	11.970
Carbon Monoxide (CO)	736	736.00	92.734
Volatile Organic Compounds (VOC)	99	99.00	12.474
Particulate Matter Ten Microns and Less (PM10)	4	4.00	0.504
Sulfur Oxides (SO_2)	0.55	0.55	0.069

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-51
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioing Phase 1B+1C

Input Data		Value	Units	Reference
a.	Commissioning Phase	1B+1C		App A-10
b.	CTG Load	-	kW	-
c.	Runtime of the Phase	1	hour	App A-10
d.	Heat input during the task/event	968	MMBtu/hr HHV	Calculated
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	0.922	MMscf	App A-10
g.	SOx Emission Factor (0.60 lb/MMscf)	**0.55**	lb/event	App A-10
h.	NO_x Emissions during the event	95	lb/event	App A-10
i.	CO Emissions during the event	736	lb/event	App A-10
j.	VOC Emissions during the event	99	lb/event	App A-10
k.	PM10 Emissions during the event	4	lb/event	App A-10
l.	Stack exhaust flow rate	548,585	ACFM	App A-10
m.	Stack exhaust temperature	182	^oF	App A-10

Appendix A-51
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 1B+1C

Input Data

		Value	Units	Reference
a.	Commissioning Phase	1B+1C	---	App A-10
b.	Stack Exhast Flow	548,585	ACFM	App A-10
c.	Stack Exit Temperature	**182**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

Calculate Stack Exit Velocity

$^oR = {}^oF + 460$ K = $[({}^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	182	642	548,585

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	32.25	9.83	5.80	150	45.70	356.48

APPENDIX A-52
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 1D

Appendix A-52
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 1D

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	**Values**	
Fev = Total Amount of Fuel Burned During Event	2.444	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	2	hours

Criteria Species Name	**Event Emissions (lb/event)**	**Hourly Emissions (lbs/hr)**	**Emissions* (grams/sec)**
Oxides of Nitrogen (NOx)	18	9.00	1.134
Carbon Monoxide (CO)	39	19.50	2.457
Volatile Organic Compounds (VOC)	0	0.00	0.000
Particulate Matter Ten Microns and Less (PM10)	9.00	4.50	0.567
Sulfur Oxides (SO_2)	1.47	0.74	0.093

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-52
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 1D

Input Data		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	1D		App A-10
b.	CTG Load	50	kW	App A-10
c.	Runtime of the Phase	2	hour	App A-10
d.	Heat input during the task/event	2566	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	2.444	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**1.47**	lb/event	Calculated
h.	NO_x Emissions during the event	18	lb/event	App A-10
i.	CO Emissions during the event	39	lb/event	App A-10
j.	VOC Emissions during the event	0	lb/event	App A-10
k.	PM10 Emissions during the event	9.0	lb/event	App A-10
l.	Stack exhaust flow rate	695,692	ACFM	App A-10
m.	Stack exhaust temperature	218	^oF	App A-10

Appendix A-52
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 1D

Input Data

		Value	Units	Reference
a.	Commissioning Phase	1D	---	App A-10
b.	Stack Exhast Flow	695,692	ACFM	---
c.	Stack Exit Temperature	**218**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-53
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 1E

Appendix A-53
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 1E

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	3.516	MMscf/event
F_m = Fuel burned per hour	1.758	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	2	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	27	13.50	1.701
Carbon Monoxide (CO)	5	2.50	0.315
Volatile Organic Compounds (VOC)	1	0.50	0.063
Particulate Matter Ten Microns and Less (PM10)	12.00	6.00	0.756
Sulfur Oxides (SO_2)	2.11	1.06	0.133

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-53
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 1E

	Input Data	Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	1E		App A-10
b.	CTG Load	90	kW	App A-10
c.	Runtime of the Phase	2	hour	App A-10
d.	Heat input during the task/event	3692	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	3.516	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**2.11**	lb/event	Calculated
h.	NO_x Emissions during the event	27	lb/event	App A-10
i.	CO Emissions during the event	5	lb/event	App A-10
j.	VOC Emissions during the event	1	lb/event	App A-10
k.	PM10 Emissions during the event	12	lb/event	App A-10
l.	Stack exhaust flow rate	942,433	ACFM	App A-10
m.	Stack exhaust temperature	202	^oF	App A-10

Appendix A-53
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 1E

Input Data

		Value	Units	Reference
a.	Commissioning Phase	1E	---	App A-10
b.	Stack Exhast Flow	942,433	ACFM	App A-10
c.	Stack Exit Temperature	**202**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = ^oF + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	202	662	942,433

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	55.40	16.89	5.80	150	45.70	367.59

APPENDIX A-54
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 1F

Appendix A-54
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 1F

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	17.109	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	14	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	95	6.79	0.855
Carbon Monoxide (CO)	32	2.29	0.288
Volatile Organic Compounds (VOC)	3	0.21	0.027
Particulate Matter Ten Microns and Less (PM10)	62.00	4.43	0.558
Sulfur Oxides (SO_2)	10.27	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-54
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 1F

	Input Data	Value	Units	Reference
a.	Commissioning Phase	1F		App A-10
b.	CTG Load	50	kW	App A-10
c.	Runtime of the Phase	14	hour	App A-10
d.	Heat input during the task/event	17964	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	17.109	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**10.27**	lb/event	Calculated
h.	NO_x Emissions during the event	95	lb/event	App A-10
i.	CO Emissions during the event	32	lb/event	App A-10
j.	VOC Emissions during the event	3	lb/event	App A-10
k.	PM10 Emissions during the event	62	lb/event	App A-10
l.	Stack exhaust flow rate	695,692	ACFM	App A-10
m.	Stack exhaust temperature	218	^oF	App A-10

Appendix A-54
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
#SPILL!

Input Data

		Value	Units	Reference
a.	Commissioning Phase	1F	---	App A-10
b.	Stack Exhast Flow	695,692	ACFM	App A-10
c.	Stack Exit Temperature	**218**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ K = $[({}^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-55
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 2A

Appendix A-55
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 2A

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	**Values**	
Fev = Total Amount of Fuel Burned During Event	15.821	MMscf/event
F_m = Fuel burned per hour	1.758	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	9	hours

Criteria Species Name	**Event Emissions (lb/event)**	**Hourly Emissions (lbs/hr)**	**Emissions* (grams/sec)**
Oxides of Nitrogen (NOx)	121	13.44	1.694
Carbon Monoxide (CO)	24	2.67	0.336
Volatile Organic Compounds (VOC)	3	0.33	0.042
Particulate Matter Ten Microns and Less (PM10)	56.00	6.22	0.784
Sulfur Oxides (SO_2)	9.49	1.05	0.133

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-55
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 2A

Input Data				
		Value	**Units**	**Reference**
a.	Commissioning Phase	2A		App A-10
b.	CTG Load	90	kW	App A-10
c.	Runtime of the Phase	9	hour	App A-10
d.	Heat input during the task/event	16612	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	15.821	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**9.49**	lb/event	Calculated
h.	NO_x Emissions during the event	121	lb/event	App A-10
i.	CO Emissions during the event	24	lb/event	App A-10
j.	VOC Emissions during the event	3	lb/event	App A-10
k.	PM10 Emissions during the event	56	lb/event	App A-10
l.	Stack exhaust flow rate	942,433	ACFM	App A-10
m.	Stack exhaust temperature	202	^oF	App A-10

Appendix A-55
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 5B

Input Data

		Value	Units	Reference
a.	Commissioning Phase	2A	---	App A-10
b.	Stack Exhast Flow	942,433	ACFM	App A-10
c.	Stack Exit Temperature	**202**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ K = $[(^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	202	662	942,433

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	55.40	16.89	5.80	150	45.70	367.59

APPENDIX A-56
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 2B

Appendix A-56
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioing Phase 2B

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	18.330	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	15	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	102	6.80	0.857
Carbon Monoxide (CO)	35	2.33	0.294
Volatile Organic Compounds (VOC)	3	0.20	0.025
Particulate Matter Ten Microns and Less (PM10)	67.00	4.47	0.563
Sulfur Oxides (SO_2)	11.00	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-56
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioing Phase 2B

Input Data

		Value	Units	Reference
a.	Commissioning Phase	2B		App A-10
b.	CTG Load	50	kW	App A-10
c.	Runtime of the Phase	15	hour	App A-10
d.	Heat input during the task/event	19247	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref. 2
f.	Heat input during the task/event, MMscf	18.330	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**11.00**	lb/event	Calculated
h.	NO_x Emissions during the event	102	lb/event	App A-10
i.	CO Emissions during the event	35	lb/event	App A-10
j.	VOC Emissions during the event	3	lb/event	App A-10
k.	PM10 Emissions during the event	67	lb/event	App A-10
l.	Stack exhaust flow rate	695,692	ACFM	App A-10
m.	Stack exhaust temperature	218	^oF	App A-10

Appendix A-56
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 2B

Input Data

		Value	Units	Reference
a.	Commissioning Phase	2B	---	App A-10
b.	Stack Exhast Flow	695,692	ACFM	App A-10
c.	Stack Exit Temperature	**218**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ K = $[(^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-57
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 3A

Appendix A-57
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioing Phase 3A

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	15.821	MMscf/event
F_m = Fuel burned per hour	1.758	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	9	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	121	13.44	1.694
Carbon Monoxide (CO)	24	2.67	0.336
Volatile Organic Compounds (VOC)	3	0.33	0.042
Particulate Matter Ten Microns and Less (PM10)	56.00	6.22	0.784
Sulfur Oxides (SO_2)	9.49	1.05	0.133

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-57
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioing Phase 3A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	3A		App A-10
b.	CTG Load	90	kW	App A-10
c.	Runtime of the Phase	9	hour	App A-10
d.	Heat input during the task/event	16,612	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	15.821	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**9.49**	lb/event	Calculated
h.	NO_x Emissions during the event	121	lb/event	App A-10
i.	CO Emissions during the event	24	lb/event	App A-10
j.	VOC Emissions during the event	3	lb/event	App A-10
k.	PM10 Emissions during the event	56	lb/event	App A-10
l.	Stack exhaust flow rate	942,433	ACFM	App A-10
m.	Stack exhaust temperature	202	^{o}F	App A-10

Appendix A-57
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 3A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	3A	---	App A-10
b.	Stack Exhast Flow	942,433	ACFM	App A-10
c.	Stack Exit Temperature	**202**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = ^oF + 460$ K = $[(^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	202	662	942,433

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	55.40	16.89	5.80	150	45.70	367.59

APPENDIX A-58
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 3B

Appendix A-58
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 3B

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	18.330	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	15	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	102	6.80	0.857
Carbon Monoxide (CO)	35	2.33	0.294
Volatile Organic Compounds (VOC)	3	0.20	0.025
Particulate Matter Ten Microns and Less (PM10)	67.00	4.47	0.563
Sulfur Oxides (SO_2)	11.00	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-58
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 3B

Input Data				
		Value	**Units**	**Reference**
a.	Commissioning Phase	3B		App A-10
b.	CTG Load	50	kW	App A-10
c.	Runtime of the Phase	15	hour	App A-10
d.	Heat input during the task/event	19247	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	18.330	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**11.00**	lb/event	Calculated
h.	NO_x Emissions during the event	102	lb/event	App A-10
i.	CO Emissions during the event	35	lb/event	App A-10
j.	VOC Emissions during the event	3	lb/event	App A-10
k.	PM10 Emissions during the event	67	lb/event	App A-10
l.	Stack exhaust flow rate	695,692	ACFM	App A-10
m.	Stack exhaust temperature	218	^{o}F	App A-10

Appendix A-58
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 3B

Input Data

		Value	Units	Reference
a.	Commissioning Phase	3B	---	App A-10
b.	Stack Exhast Flow	695,692	ACFM	App A-10
c.	Stack Exit Temperature	**218**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

Calculate Stack Exit Velocity

$^oR = {}^oF + 460$ $K = [({}^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-59
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 4A

Appendix A-59
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 4A

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	10.998	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	9	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	82	9.11	1.148
Carbon Monoxide (CO)	173	19.22	2.422
Volatile Organic Compounds (VOC)	2	0.22	0.028
Particulate Matter Ten Microns and Less (PM10)	40.00	4.44	0.560
Sulfur Oxides (SO_2)	6.60	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-59
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 4A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	4A		App A-10
b.	CTG Load	50	kW	App A-10
c.	Runtime of the Phase	9	hour	App A-10
d.	Heat input during the task/event	11548	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	10.998	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**6.60**	lb/event	Calculated
h.	NO_x Emissions during the event	82	lb/event	App A-10
i.	CO Emissions during the event	173	lb/event	App A-10
j.	VOC Emissions during the event	2	lb/event	App A-10
k.	PM10 Emissions during the event	40	lb/event	App A-10
l.	Stack exhaust flow rate	679,267	ACFM	App A-10
m.	Stack exhaust temperature	218	^oF	App A-10

Appendix A-59
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 4A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	4A	---	App A-10
b.	Stack Exhast Flow	679,267	ACFM	App A-10
c.	Stack Exit Temperature	**218**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	679,267

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	39.93	12.17	5.80	150	45.70	376.48

APPENDIX A-60
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 4B

Appendix A-60
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 4B

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	0.000	MMscf/event
F_m = Fuel burned per hour	0.000	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	15	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	0	0.00	0.000
Carbon Monoxide (CO)	0	0.00	0.000
Volatile Organic Compounds (VOC)	0	0.00	0.000
Particulate Matter Ten Microns and Less (PM10)	0.00	0.00	0.000
Sulfur Oxides (SO_2)	0.00	0.00	0.000

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-60
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 4B

Input Data		**Value**	**Units**	**Reference**
a.	Commissioning Phase	4B		App A-10
b.	CTG Load	0	kW	App A-10
c.	Runtime of the Phase	15	hour	App A-10
d.	Heat input during the task/event	0	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	App A-10
f.	Heat input during the task/event, MMscf	0	MMscf	App A-10
g.	SOx Emission Factor (0.75 lb/MMscf)	**0**	lb/event	App A-10
h.	NO_x Emissions during the event	0	lb/event	App A-10
i.	CO Emissions during the event	0	lb/event	App A-10
j.	VOC Emissions during the event	0	lb/event	App A-10
k.	PM10 Emissions during the event	0	lb/event	App A-10
l.	Stack exhaust flow rate	0	ACFM	App A-10
m.	Stack exhaust temperature	150	^{o}F	App A-10

Appendix A-60
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 5B

Input Data

		Value	Units	Reference
a.	Commissioning Phase	4B	---	App A-10
b.	Stack Exhast Flow	0	ACFM	App A-10
c.	Stack Exit Temperature	**0**	°F	App A-10
d.				
e.	Standard Temperature, deg F	60	°F	---
	Standard Temperature, deg R	520	°R	---
f.	Stack Base Elevation	560	ft	
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

°R = °F + 460

K = [(°F - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 — 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (°F)	Stack Temp. (°R)	Stack Gas Flow Rate (ACFM)
MPP	0	460	0

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	0.00	0.00	5.80	150	45.70	255.37

APPENDIX A-61
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 5A

Appendix A-61
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commission Phase 5A

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	1.717	MMscf/event
F_m = Fuel burned per hour	0.572	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	3	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	312	104.00	13.104
Carbon Monoxide (CO)	1180	393.33	49.559
Volatile Organic Compounds (VOC)	189	63.00	7.938
Particulate Matter Ten Microns and Less (PM10)	11	3.67	0.462
Sulfur Oxides (SO_2)	1.03	0.34	0.043

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-61
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commission Phase 5A

		Value	Units	Reference
	Input Data			
		Value	**Units**	**Reference**
a.	Commissioning Phase	5A		App A-10
b.	CTG Load	10	kW	App A-10
c.	Runtime of the Phase	3	hour	App A-10
d.	Heat input during the task/event	1803	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	1.717	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**1.03**	lb/event	Calculated
h.	NO_x Emissions during the event	312	lb/event	App A-10
i.	CO Emissions during the event	1180	lb/event	App A-10
j.	VOC Emissions during the event	189	lb/event	App A-10
k.	PM10 Emissions during the event	11	lb/event	App A-10
l.	Stack exhaust flow rate	526,845	ACFM	App A-10
m.	Stack exhaust temperature	185	^oF	App A-10

Appendix A-61
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 5A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	5A	---	App A-10
b.	Stack Exhast Flow	526,845	ACFM	App A-10
c.	Stack Exit Temperature	**185**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Section 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

Calculate Stack Exit Velocity

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	185	645	526,845

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	30.97	9.44	5.80	150	45.70	358.15

APPENDIX A-62
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 5B

Appendix A-62
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commission Phase 5B

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants

Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	1.676	MMscf/event
F_m = Fuel burned per hour	0.838	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	2	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	254	127.00	16.002
Carbon Monoxide (CO)	932	466.00	58.715
Volatile Organic Compounds (VOC)	107	53.50	6.741
Particulate Matter Ten Microns and Less (PM10)	7	3.50	0.441
Sulfur Oxides (SO_2)	1.01	0.51	0.064

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-62
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commission Phase 5B

Input Data		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	5B		App A-10
b.	CTG Load	25	kW	App A-10
c.	Runtime of the Phase	2	hour	App A-10
d.	Heat input during the task/event	1760	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	1.676	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**1.01**	lb/event	Calculated
h.	NO_x Emissions during the event	254	lb/event	App A-10
i.	CO Emissions during the event	932	lb/event	App A-10
j.	VOC Emissions during the event	107	lb/event	App A-10
k.	PM10 Emissions during the event	7	lb/event	App A-10
l.	Stack exhaust flow rate	533,721	ACFM	App A-10
m.	Stack exhaust temperature	191	^oF	App A-10

Appendix A-62
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 5B

Input Data

		Value	Units	Reference
a.	Commissioning Phase	5B	---	App A-10
b.	Stack Exhast Flow	533,721	ACFM	App A-10
c.	Stack Exit Temperature	**191**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	191	651	533,721

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	31.37	9.56	5.80	150	45.70	361.48

APPENDIX A-63
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 5C

Appendix A-63
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commission Phase 5C

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	2.013	MMscf/event
F_m = Fuel burned per hour	1.007	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	2	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	122	61.00	7.686
Carbon Monoxide (CO)	2014	1,007.00	126.880
Volatile Organic Compounds (VOC)	288	144.00	18.144
Particulate Matter Ten Microns and Less (PM10)	8	4.00	0.504
Sulfur Oxides (SO_2)	1.21	0.61	0.076

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-63
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commission Phase 5C

Input Data				
		Value	**Units**	**Reference**
a.	Commissioning Phase	5C		**App A-10**
b.	CTG Load	35	kW	**App A-10**
c.	Runtime of the Phase	2	hour	**App A-10**
d.	Heat input during the task/event	2114	MMBtu/hr HHV	**App A-10**
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	2.013	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**1.21**	lb/event	Calculated
h.	NO_x Emissions during the event	122	lb/event	**App A-10**
i.	CO Emissions during the event	2014	lb/event	**App A-10**
j.	VOC Emissions during the event	288	lb/event	**App A-10**
k.	PM10 Emissions during the event	8	lb/event	**App A-10**
l.	Stack exhaust flow rate	589,397	ACFM	**App A-10**
m.	Stack exhaust temperature	202	^oF	**App A-10**

Appendix A-63
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 5C

Input Data

		Value	Units	Reference
a.	Commissioning Phase	5C	---	**App A-10**
b.	Stack Exhast Flow	589,397	ACFM	**App A-10**
c.	Stack Exit Temperature	**202**	^oF	**App A-10**
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	202	662	589,397

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	34.65	10.56	5.80	150	45.70	367.59

APPENDIX A-64
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 5D

Appendix A-64
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioing Phase 5D

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	2.444	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	2	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	27	13.50	1.701
Carbon Monoxide (CO)	5	2.50	0.315
Volatile Organic Compounds (VOC)	1	0.50	0.063
Particulate Matter Ten Microns and Less (PM10)	9	4.50	0.567
Sulfur Oxides (SO_2)	1.47	0.74	0.093

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-64
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioing Phase 5D

Input Data		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	5D		**App A-10**
b.	CTG Load	50	kW	**App A-10**
c.	Runtime of the Phase	2	hour	**App A-10**
d.	Heat input during the task/event	2566	MMBtu/hr HHV	**App A-10**
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	2.444	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**1.47**	lb/event	Calculated
h.	NO_x Emissions during the event	27	lb/event	**App A-10**
i.	CO Emissions during the event	5	lb/event	**App A-10**
j.	VOC Emissions during the event	1	lb/event	**App A-10**
k.	PM10 Emissions during the event	9	lb/event	**App A-10**
l.	Stack exhaust flow rate	695,692	ACFM	**App A-10**
m.	Stack exhaust temperature	218	^oF	**App A-10**

Appendix A-64
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 5D

Input Data

		Value	Units	Reference
a.	Commissioning Phase	5D	---	**App A-10**
b.	Stack Exhast Flow	695,692	ACFM	**App A-10**
c.	Stack Exit Temperature	**218**	^oF	**App A-10**
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit				Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)	
MPP				218	678	695,692	

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-65
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emission
Commissioning Phase 5E

Appendix A-65
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commission Phase 5E

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	10.548	MMscf/event
F_m = Fuel burned per hour	1.758	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	6	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	81	13.50	1.701
Carbon Monoxide (CO)	14	2.33	0.294
Volatile Organic Compounds (VOC)	2	0.33	0.042
Particulate Matter Ten Microns and Less (PM10)	37	6.17	0.777
Sulfur Oxides (SO_2)	6.33	1.06	0.133

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-65
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commission Phase 5E

Input Data		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	5E		**App A.10**
b.	CTG Load	90	kW	**App A.10**
c.	Runtime of the Phase	6	hour	**App A.10**
d.	Heat input during the task/event	11075	MMBtu/hr HHV	**App A.10**
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	10.548	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**6.33**	lb/event	Calculated
h.	NO_x Emissions during the event	81	lb/event	**App A.10**
i.	CO Emissions during the event	14	lb/event	**App A.10**
j.	VOC Emissions during the event	2	lb/event	**App A.10**
k.	PM10 Emissions during the event	37	lb/event	**App A.10**
l.	Stack exhaust flow rate	942,433	ACFM	**App A.10**
m.	Stack exhaust temperature	202	^oF	**App A.10**

Appendix A-65
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 5E

Input Data

		Value	Units	Reference
a.	Commissioning Phase	5E	---	**App A.10**
b.	Stack Exhast Flow	942,433	ACFM	**App A.10**
c.	Stack Exit Temperature	**202**	^oF	**App A.10**
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	202	662	942,433

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	55.40	16.89	5.80	150	45.70	367.59

APPENDIX A-66
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 5F

Appendix A-66
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 5F

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	10.998	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	9	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	61	6.78	0.854
Carbon Monoxide (CO)	21	2.33	0.294
Volatile Organic Compounds (VOC)	2	0.22	0.028
Particulate Matter Ten Microns and Less (PM10)	40	4.44	0.560
Sulfur Oxides (SO_2)	6.60	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-66
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 5F

		Value	Units	Reference
Input Data				
a.	Commissioning Phase	5F		**APP A-10**
b.	CTG Load	59	kW	**APP A-10**
c.	Runtime of the Phase	9	hour	**APP A-10**
d.	Heat input during the task/event	11548	MMBtu/hr HHV	**APP A-10**
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	10.998	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**6.60**	lb/event	Calculated
h.	NO_x Emissions during the event	61	lb/event	**APP A-10**
i.	CO Emissions during the event	21	lb/event	**APP A-10**
j.	VOC Emissions during the event	2	lb/event	**APP A-10**
k.	PM10 Emissions during the event	40	lb/event	**APP A-10**
l.	Stack exhaust flow rate	695,692	ACFM	**APP A-10**
m.	Stack exhaust temperature	218	^oF	**APP A-10**

Appendix A-66
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 5F

Input Data

		Value	Units	Reference
a.	Commissioning Phase	5F	---	**APP A-10**
b.	Stack Exhast Flow	695,692	ACFM	**APP A-10**
c.	Stack Exit Temperature	**218**	^oF	**APP A-10**
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ $\quad$ $K = [({}^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 — 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-67
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 6A

Appendix A-67
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 6A

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	8.554	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	7	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	64	9.14	1.152
Carbon Monoxide (CO)	135	19.29	2.430
Volatile Organic Compounds (VOC)	2	0.29	0.036
Particulate Matter Ten Microns and Less (PM10)	31	4.43	0.558
Sulfur Oxides (SO_2)	5.13	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-67
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 6A

Input Data				
		Value	**Units**	**Reference**
a.	Commissioning Phase	6A		**App A10**
b.	CTG Load	50	kW	**App A10**
c.	Runtime of the Phase	7	hour	**App A10**
d.	Heat input during the task/event	8982	MMBtu/hr HHV	**App A10**
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	8.554	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**5.13**	lb/event	Calculated
h.	NO_x Emissions during the event	64	lb/event	**App A10**
i.	CO Emissions during the event	135	lb/event	**App A10**
j.	VOC Emissions during the event	2	lb/event	**App A10**
k.	PM10 Emissions during the event	31	lb/event	**App A10**
l.	Stack exhaust flow rate	695,692	ACFM	**App A10**
m.	Stack exhaust temperature	218	^{o}F	**App A10**

Appendix A-67
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 6A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	6A	---	**App A10**
b.	Stack Exhast Flow	695,692	ACFM	**App A10**
c.	Stack Exit Temperature	**218**	^oF	**App A10**
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

Calculate Stack Exit Velocity

$^oR = {}^oF + 460$

$K = [({}^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-68
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 6B

Appendix A-68
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 6B

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	**Values**	
Fev = Total Amount of Fuel Burned During Event	3.516	MMscf/event
F_m = Fuel burned per hour	1.758	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	2	hours

Criteria Species Name	**Event Emissions (lb/event)**	**Hourly Emissions (lbs/hr)**	**Emissions* (grams/sec)**
Oxides of Nitrogen (NOx)	27	13.50	1.701
Carbon Monoxide (CO)	5	2.50	0.315
Volatile Organic Compounds (VOC)	1	0.50	0.063
Particulate Matter Ten Microns and Less (PM10)	12	6.00	0.756
Sulfur Oxides (SO_2)	2.11	1.06	0.133

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-68
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 6B

Input Data				
		Value	**Units**	**Reference**
a.	Commissioning Phase	6B		**App A-10**
b.	CTG Load	90	kW	**App A-10**
c.	Runtime of the Phase	2	hour	**App A-10**
d.	Heat input during the task/event	3692	MMBtu/hr HHV	**App A-10**
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	3.516	MMscf	Calculated
g.	SOx Emission Factor (0.75 lb/MMscf)	**2.11**	lb/event	Calculated
h.	NO_x Emissions during the event	27	lb/event	**App A-10**
i.	CO Emissions during the event	5	lb/event	**App A-10**
j.	VOC Emissions during the event	1	lb/event	**App A-10**
k.	PM10 Emissions during the event	12	lb/event	**App A-10**
l.	Stack exhaust flow rate	942,433	ACFM	**App A-10**
m.	Stack exhaust temperature	202	^oF	**App A-10**

Appendix A-68
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 6B

Input Data

		Value	Units	Reference
a.	Commissioning Phase	6B	---	**App A-10**
b.	Stack Exhast Flow	942,433	ACFM	**App A-10**
c.	Stack Exit Temperature	**202**	^oF	**App A-10**
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ $\quad$ $K = [({}^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	202	662	942,433

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	55.40	16.89	5.80	150	45.70	367.59

APPENDIX A-69
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 6C

Appendix A-69
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 6C

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	**Values**	
Fev = Total Amount of Fuel Burned During Event	3.516	MMscf/event
F_m = Fuel burned per hour	1.758	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	2	hours

Criteria Species Name	**Event Emissions (lb/event)**	**Hourly Emissions (lbs/hr)**	**Emissions* (grams/sec)**
Oxides of Nitrogen (NOx)	27	13.50	1.701
Carbon Monoxide (CO)	5	2.50	0.315
Volatile Organic Compounds (VOC)	1	0.50	0.063
Particulate Matter Ten Microns and Less (PM10)	12	6.00	0.756
Sulfur Oxides (SO_2)	2.11	1.06	0.133

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-69
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 6C

Input Data

		Value	Units	Reference
a.	Commissioning Phase	6C		App A-10
b.	CTG Load	90	kW	App A-10
c.	Runtime of the Phase	2	hour	App A-10
d.	Heat input during the task/event	3692	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	3.516	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**2.11**	lb/event	Calculated
h.	NO_x Emissions during the event	27	lb/event	App A-10
i.	CO Emissions during the event	5	lb/event	App A-10
j.	VOC Emissions during the event	1	lb/event	App A-10
k.	PM10 Emissions during the event	12	lb/event	App A-10
l.	Stack exhaust flow rate	942,433	ACFM	App A-10
m.	Stack exhaust temperature	202	^{o}F	App A-10

Appendix A-69
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 6C

Input Data

		Value	Units	Reference
a.	Commissioning Phase	6C	---	App A-10
b.	Stack Exhast Flow	942,433	ACFM	App A-10
c.	Stack Exit Temperature	**202**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	Sec 2
f.	Stack Base Elevation	560	ft	
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = ^oF + 460$ $K = [(^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	202	662	942,433

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	55.40	16.89	5.80	150	45.70	367.59

APPENDIX A-70
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 6D

Appendix A-70
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 6D

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	15.887	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	13	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	88	6.77	0.853
Carbon Monoxide (CO)	30	2.31	0.291
Volatile Organic Compounds (VOC)	3	0.23	0.029
Particulate Matter Ten Microns and Less (PM10)	58	4.46	0.562
Sulfur Oxides (SO_2)	9.53	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-70
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 6D

Input Data				
		Value	**Units**	**Reference**
a.	Commissioning Phase	6D		App A-10
b.	CTG Load	50	kW	App A-10
c.	Runtime of the Phase	13	hour	App A-10
d.	Heat input during the task/event	16681	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	Ref 2
f.	Heat input during the task/event, MMscf	15.887	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**9.53**	lb/event	Calculated
h.	NO_x Emissions during the event	88	lb/event	App A-10
i.	CO Emissions during the event	30	lb/event	App A-10
j.	VOC Emissions during the event	3	lb/event	App A-10
k.	PM10 Emissions during the event	58	lb/event	App A-10
l.	Stack exhaust flow rate	695,692	ACFM	App A-10
m.	Stack exhaust temperature	218	^{o}F	App A-10

Appendix A-70
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 6D

Input Data

		Value	Units	Reference
a.	Commissioning Phase	6D	---	App A-10
b.	Stack Exhast Flow	695,692	ACFM	App A-10
c.	Stack Exit Temperature	**218**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-71
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 7A

Appendix A-71
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioing Phase 7A

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	**Values**	
Fev = Total Amount of Fuel Burned During Event	8.790	MMscf/event
F_m = Fuel burned per hour	1.758	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	5	hours

Criteria Species Name	**Event Emissions (lb/event)**	**Hourly Emissions (lbs/hr)**	**Emissions* (grams/sec)**
Oxides of Nitrogen (NOx)	67	13.40	1.688
Carbon Monoxide (CO)	13	2.60	0.328
Volatile Organic Compounds (VOC)	2	0.40	0.050
Particulate Matter Ten Microns and Less (PM10)	31	6.20	0.781
Sulfur Oxides (SO_2)	5.27	1.05	0.133

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-71
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioing Phase 7A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	7A		App A-10
b.	CTG Load	90	kW	App A-10
c.	Runtime of the Phase	5	hour	App A-10
d.	Heat input during the task/event	9229	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	8.790	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**5.27**	lb/event	Calculated
h.	NO_x Emissions during the event	67	lb/event	App A-10
i.	CO Emissions during the event	13	lb/event	App A-10
j.	VOC Emissions during the event	2	lb/event	App A-10
k.	PM10 Emissions during the event	31	lb/event	App A-10
l.	Stack exhaust flow rate	942,433	ACFM	App A-10
m.	Stack exhaust temperature	202	^oF	App A-10

Appendix A-71
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 7A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	7A	---	App A-10
b.	Stack Exhast Flow	942,433	ACFM	App A-10
c.	Stack Exit Temperature	**202**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

Calculate Stack Exit Velocity

$^oR = ^oF + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	202	662	942,433

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	55.40	16.89	5.80	150	45.70	367.59

APPENDIX A-72
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 7B

Appendix A-72
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 7B

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	6.110	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	5	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	45	9.00	1.134
Carbon Monoxide (CO)	96	19.20	2.419
Volatile Organic Compounds (VOC)	1	0.20	0.025
Particulate Matter Ten Microns and Less (PM10)	22	4.40	0.554
Sulfur Oxides (SO_2)	3.67	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-72
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 7B

		Value	Units	Reference
Input Data				
		Value	**Units**	**Reference**
a.	Commissioning Phase	7B		App A-10
b.	CTG Load	50	kW	App A-10
c.	Runtime of the Phase	5	hour	App A-10
d.	Heat input during the task/event	6416	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	6.110	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**3.67**	lb/event	Calculated
h.	NO_x Emissions during the event	45	lb/event	App A-10
i.	CO Emissions during the event	96	lb/event	App A-10
j.	VOC Emissions during the event	1	lb/event	App A-10
k.	PM10 Emissions during the event	22	lb/event	App A-10
l.	Stack exhaust flow rate	695,692	ACFM	App A-10
m.	Stack exhaust temperature	218	^oF	App A-10

Appendix A-72
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 7B

Input Data

		Value	Units	Reference
a.	Commissioning Phase	7B	---	App A-10
b.	Stack Exhast Flow	695,692	ACFM	App A-10
c.	Stack Exit Temperature	**218**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-73
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 7C

Appendix A-73
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 7C

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	**Values**	
Fev = Total Amount of Fuel Burned During Event	17.109	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	14	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	95	6.79	0.855
Carbon Monoxide (CO)	32	2.29	0.288
Volatile Organic Compounds (VOC)	3	0.21	0.027
Particulate Matter Ten Microns and Less (PM10)	62	4.43	0.558
Sulfur Oxides (SO_2)	10.27	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-73
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 7C

Input Data

		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	7C		App A-10
b.	CTG Load	50	kW	App A-10
c.	Runtime of the Phase	14	hour	App A-10
d.	Heat input during the task/event	17964	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	17.109	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**10.27**	lb/event	Calculated
h.	NO_x Emissions during the event	95	lb/event	App A-10
i.	CO Emissions during the event	32	lb/event	App A-10
j.		3	lb/event	App A-10
k.	PM10 Emissions during the event	62	lb/event	App A-10
l.	Stack exhaust flow rate	695,692	ACFM	App A-10
m.	Stack exhaust temperature	218	^oF	App A-10

Appendix A-73
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 7C

Input Data

		Value	Units	Reference
a.	Commissioning Phase	7C	---	App A-10
b.	Stack Exhast Flow	695,692	ACFM	App A-10
c.	Stack Exit Temperature	**218**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.		150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-74
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 8A

Appendix A-74
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 8A

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	14.664	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	12	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	82	6.83	0.861
Carbon Monoxide (CO)	28	2.33	0.294
Volatile Organic Compounds (VOC)	3	0.25	0.031
Particulate Matter Ten Microns and Less (PM10)	54	4.50	0.567
Sulfur Oxides (SO_2)	8.80	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-74
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 8A

Input Data		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	8A		**App A-10**
b.	CTG Load	50	kW	**App A-10**
c.	Runtime of the Phase	12	hour	**App A-10**
d.	Heat input during the task/event	15397	MMBtu/hr HHV	**App A-10**
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	14.664	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**8.80**	lb/event	Calculated
h.	NO_x Emissions during the event	82	lb/event	**App A-10**
i.	CO Emissions during the event	28	lb/event	**App A-10**
j.	VOC Emissions during the event	3	lb/event	**App A-10**
k.	PM10 Emissions during the event	54	lb/event	**App A-10**
l.	Stack exhaust flow rate	695,692	ACFM	**App A-10**
m.	Stack exhaust temperature	218	^{o}F	**App A-10**

Appendix A-74
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 8A

Input Data

		Value	Units	Reference
a.	Commissioning Phase	8A	---	**App A-10**
b.	Stack Exhast Flow	695,692	ACFM	**App A-10**
c.	Stack Exit Temperature	**218**	^oF	**App A-10**
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-75
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 8B, GT Not Operating

Appendix A-75
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioing Phase 8B, GT Not Operating

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$ 0

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	0.000	MMscf/event
F_m = Fuel burned per hour	#DIV/0!	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	0	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	0	#DIV/0!	#DIV/0!
Carbon Monoxide (CO)	0	#DIV/0!	#DIV/0!
Volatile Organic Compounds (VOC)	0	#DIV/0!	#DIV/0!
Particulate Matter Ten Microns and Less (PM10)	0.00	#DIV/0!	#DIV/0!
Sulfur Oxides (SO_2)	0.00	#DIV/0!	#DIV/0!

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-75
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioing Phase 8B GT Not Operating

Input Data		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	8B		App A-10
b.	CTG Load	0	kW	App A-10
c.	Runtime of the Phase	0	hour	App A-10
d.	Heat input during the task/event	0	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	0.000	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**0.00**	lb/event	Calculated
h.	NO_x Emissions during the event	0	lb/event	App A-10
i.	CO Emissions during the event	0	lb/event	App A-10
j.		0	lb/event	App A-10
k.	PM10 Emissions during the event	0.0	lb/event	App A-10
l.	Stack exhaust flow rate	0	ACFM	App A-10
m.	Stack exhaust temperature	0	^oF	App A-10

Appendix A-75
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 8B, GT Not Operating

Input Data

		8B	Value	Units	Reference
a.	Commissioning Phase		8B	---	App A-10
b.	Stack Exhast Flow		0	ACFM	App A-10
c.	Stack Exit Temperature		**0**	^oF	App A-10
d.					
e.	Standard Temperature, deg F		60	^oF	---
	Standard Temperature, deg R		520	^oR	
f.	Stack Base Elevation		560	ft	Sec 2
g.	Stack Diameter		19	ft	2
h.			150	ft	2

<u>Calculate Stack Exit Velocity</u> **<u>0</u>**

$^oR = {}^oF + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	0	460	0

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	0.00	0.00	5.80	150	45.70	255.37

APPENDIX A-76
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 9, No GT Operation

Appendix A-76
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioing Phase 9, No GT Operation

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$ 0

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	0.000	MMscf/event
F_m = Fuel burned per hour	0.000	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	24	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	0	0.00	0.000
Carbon Monoxide (CO)	0	0.00	0.000
Volatile Organic Compounds (VOC)	0	0.00	0.000
Particulate Matter Ten Microns and Less (PM10)	0.00	0.00	0.000
Sulfur Oxides (SO_2)	0.00	0.00	0.000

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-76
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioing Phase 9, NO GT Operation

Input Data		Value	Units	Reference
a.	Commissioning Phase	9		App A-10
b.	CTG Load	0	kW	App A-10
c.	Runtime of the Phase	24	hour	App A-10
d.	Heat input during the task/event	0	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	0.000	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**0.00**	lb/event	Calculated
h.	NO_x Emissions during the event	0	lb/event	App A-10
i.	CO Emissions during the event	0	lb/event	App A-10
j.		0	lb/event	App A-10
k.	PM10 Emissions during the event	0.0	lb/event	App A-10
l.	Stack exhaust flow rate	0	ACFM	App A-10
m.	Stack exhaust temperature	0	^oF	App A-10

Appendix A-76
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 9, No GT Operation

Input Data

		Value	Units	Reference
a.	Commissioning Phase	9	---	App A-10
b.	Stack Exhast Flow	0	ACFM	App A-10
c.	Stack Exit Temperature	**0**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.		150	ft	2

Calculate Stack Exit Velocity **0**

$^oR = ^oF + 460$ K = $[(^oF - 32) / 1.8] + 273.15$

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	0	460	0

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	0.00	0.00	5.80	150	45.70	255.37

APPENDIX A-77
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 10A1

Appendix A-77
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 10A1

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	1.144	MMscf/event
F_m = Fuel burned per hour	0.572	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	2	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	208	104.00	13.104
Carbon Monoxide (CO)	787	393.50	49.580
Volatile Organic Compounds (VOC)	126	63.00	7.938
Particulate Matter Ten Microns and Less (PM10)	7.00	3.50	0.441
Sulfur Oxides (SO_2)	0.69	0.35	0.043

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-77
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 10A1

Input Data		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	10A1		App A-10
b.	CTG Load	10	kW	App A-10
c.	Runtime of the Phase	2	hour	App A-10
d.	Heat input during the task/event	1201	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	1.144	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**0.69**	lb/event	Calculated
h.	NO_x Emissions during the event	208	lb/event	App A-10
i.	CO Emissions during the event	787	lb/event	App A-10
j.	VOC Emissions during the event	126	lb/event	App A-10
k.	PM10 Emissions during the event	7	lb/event	App A-10
l.	Stack exhaust flow rate	514,587	ACFM	App A-10
m.	Stack exhaust temperature	170	^{o}F	App A-10

Appendix A-77
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 10A1

Input Data

		Value	Units	Reference
a.	Commissioning Phase	10A1	---	App A-10
b.	Stack Exhast Flow	514,587	ACFM	App A-10
c.	Stack Exit Temperature	**170**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {}^oF + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	170	630	514,587

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	30.25	9.22	5.80	150	45.70	349.82

APPENDIX A-78
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 10A2+BCD

Appendix A-78
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 10A2+BCD

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	**Values**	
Fev = Total Amount of Fuel Burned During Event	0.708	MMscf/event
F_m = Fuel burned per hour	0.708	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	1	hours

Criteria Species Name	**Event Emissions (lb/event)**	**Hourly Emissions (lbs/hr)**	**Emissions* (grams/sec)**
Oxides of Nitrogen (NOx)	94	94.00	11.844
Carbon Monoxide (CO)	427	427.00	53.801
Volatile Organic Compounds (VOC)	63	63.00	7.938
Particulate Matter Ten Microns and Less (PM10)	3	3.00	0.378
Sulfur Oxides (SO_2)	0.42	0.42	0.053

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-78
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 10A2+BCD

		Value	Units	Reference
a.	Commissioning Phase	10A2+BCD		App A-10
b.	CTG Load	-	kW	App A-10
c.	Runtime of the Phase	1	hour	App A-10
d.	Heat input during the task/event	743	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	
f.	Heat input during the task/event, MMscf	0.708	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**0.42**	lb/event	Calculated
h.	NO_x Emissions during the event	94	lb/event	App A-10
i.	CO Emissions during the event	427	lb/event	App A-10
j.	VOC Emissions during the event	63	lb/event	App A-10
k.	PM10 Emissions during the event	3	lb/event	App A-10
l.	Stack exhaust flow rate	579,535	ACFM	App A-10
m.	Stack exhaust temperature	191	^oF	App A-10

Appendix A-78
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 10A2+BCD

Input Data

		Value	Units	Reference
a.	Commissioning Phase	10A2+BCD	---	App A-10
b.	Stack Exhast Flow	579,535	ACFM	App A-10
c.	Stack Exit Temperature	**191**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.		150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit				Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)	
MPP				191	651	579,535	

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	34.07	10.38	5.80	150	45.70	361.48

APPENDIX A-79
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 10E

Appendix A-79
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 10E

Device ID Number: MPP Combustion Turbine

Fuel Type: Natural Gas
Process Units: MMscf for gas and lbs/hr for pollutants

Control Equipment: Selective Catalytic Reduction and CO Catalyst

Hours per Event of Operation Y_{ev}
Emissions per Event H_{ev}
Hourly Emissions Estimate: $H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	Values	
Fev = Total Amount of Fuel Burned During Event	21.095	MMscf/event
F_m = Fuel burned per hour	1.758	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	12	hours

Criteria Species Name	Event Emissions (lb/event)	Hourly Emissions (lbs/hr)	Emissions* (grams/sec)
Oxides of Nitrogen (NOx)	108	9.00	1.134
Carbon Monoxide (CO)	13	1.08	0.136
Volatile Organic Compounds (VOC)	4	0.33	0.042
Particulate Matter Ten Microns and Less (PM10)	74	6.17	0.777
Sulfur Oxides (SO_2)	12.66	1.06	0.133

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-79
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 10E

Input Data

		Value	Units	Reference
a.	Commissioning Phase	10E		App A-10
b.	CTG Load	90	kW	App A-10
c.	Runtime of the Phase	12	hour	App A-10
d.	Heat input during the task/event	22150	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	21.095	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**12.66**	lb/event	Calculated
h.	NO_x Emissions during the event	108	lb/event	App A-10
i.	CO Emissions during the event	13	lb/event	App A-10
j.	VOC Emissions during the event	4	lb/event	App A-10
k.	PM10 Emissions during the event	74	lb/event	App A-10
l.	Stack exhaust flow rate	942,433	ACFM	App A-10
m.	Stack exhaust temperature	202	^oF	App A-10

Appendix A-79
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 10E

Input Data

		Value	Units	Reference
a.	Commissioning Phase	10E	---	App A-10
b.	Stack Exhast Flow	942,433	ACFM	App A-10
c.	Stack Exit Temperature	**202**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

Calculate Stack Exit Velocity

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	202	662	942,433

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	55.40	16.89	5.80	150	45.70	367.59

APPENDIX A-80
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 10F

Appendix A-80
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 10F

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	**Values**	
Fev = Total Amount of Fuel Burned During Event	10.998	MMscf/event
F_m = Fuel burned per hour	1.222	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	9	hours

Criteria Species Name	**Event Emissions (lb/event)**	**Hourly Emissions (lbs/hr)**	**Emissions* (grams/sec)**
Oxides of Nitrogen (NOx)	61	6.78	0.854
Carbon Monoxide (CO)	21	2.33	0.294
Volatile Organic Compounds (VOC)	2	0.22	0.028
Particulate Matter Ten Microns and Less (PM10)	40	4.44	0.560
Sulfur Oxides (SO_2)	6.60	0.73	0.092

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-80
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 10F

Input Data		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	10F		App A-10
b.	CTG Load	50	kW	App A-10
c.	Runtime of the Phase	9	hour	App A-10
d.	Heat input during the task/event	11548	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	10.998	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**6.60**	lb/event	Calculated
h.	NO_x Emissions during the event	61	lb/event	App A-10
i.	CO Emissions during the event	21	lb/event	App A-10
j.	VOC Emissions during the event	2	lb/event	App A-10
k.	PM10 Emissions during the event	40	lb/event	App A-10
l.	Stack exhaust flow rate	695,692	ACFM	App A-10
m.	Stack exhaust temperature	218	^oF	App A-10

Appendix A-80
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 10F

Input Data

		Value	Units	Reference
a.	Commissioning Phase	10F	---	App A-10
b.	Stack Exhast Flow	695,692	ACFM	App A-10
c.	Stack Exit Temperature	**218**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

<u>Calculate Stack Exit Velocity</u>

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit	Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)
MPP	218	678	695,692

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	40.89	12.46	5.80	150	45.70	376.48

APPENDIX A-81
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 11

Appendix A-81
Magnolia Power Project Upgrade 2024
Criteria Pollutant Emissions
Commissioning Phase 11

Device ID Number:	MPP Combustion Turbine
Fuel Type:	Natural Gas
Process Units:	MMscf for gas and lbs/hr for pollutants
Control Equipment:	Selective Catalytic Reduction and CO Catalyst
Hours per Event of Operation	Y_{ev}
Emissions per Event	H_{ev}
Hourly Emissions Estimate:	$H_{er} = H_{ev} \div Y_{ev}$

Parameter Symbols/Names	**Values**	
Fev = Total Amount of Fuel Burned During Event	23.036	MMscf/event
F_m = Fuel burned per hour	1.920	MMscf/hr
Event Emission Rate (H_{ev})	See Below	lbs/event
Hourly Emission Rate (H_{er})	See Below	lbs/hr
Commissioning Event Time	12	hours

Criteria Species Name	**Event Emissions (lb/event)**	**Hourly Emissions (lbs/hr)**	**Emissions* (grams/sec)**
Oxides of Nitrogen (NOx)	40	3.33	0.420
Carbon Monoxide (CO)	36	3.00	0.378
Volatile Organic Compounds (VOC)	4	0.33	0.042
Particulate Matter Ten Microns and Less (PM10)	66	5.50	0.693
Sulfur Oxides (SO_2)	13.82	1.15	0.145

*** Emission (g/sec) = Emission lb/event x 453.592/(3600 x Event Time))**

Appendix A-81
Magnolia Power Project Upgrade 2024
Development Of Criteria Pollutant Emission Factors
Commissioning Phase 11

Input Data		Value	Units	Reference
		Value	**Units**	**Reference**
a.	Commissioning Phase	11		App A-10
b.	CTG Load	202	kW	App A-10
c.	Runtime of the Phase	12	hour	App A-10
d.	Heat input during the task/event	24188	MMBtu/hr HHV	App A-10
e.	Natural Gas Heating Value, HHV	1050	Btu/scf	2
f.	Heat input during the task/event, MMscf	23.036	MMscf	Calculated
g.	SOx Emission Factor (0.60 lb/MMscf)	**13.82**	lb/event	Calculated
h.	NO_x Emissions during the event	40	lb/event	App A-10
i.	CO Emissions during the event	36	lb/event	App A-10
j.	VOC Emissions during the event	4	lb/event	App A-10
k.	PM10 Emissions during the event	66	lb/event	App A-10
l.	Stack exhaust flow rate	1,116,822	ACFM	App A-10
m.	Stack exhaust temperature	198	^oF	App A-10

Appendix A-81
Magnolia Power Project Upgrade 2024
Development Of Stack Parameters
Commissioing Phase 11

Input Data

		Value	Units	Reference
a.	Commissioning Phase	11	---	App A-10
b.	Stack Exhast Flow	1,116,822	ACFM	App A-10
c.	Stack Exit Temperature	**198**	^oF	App A-10
d.				
e.	Standard Temperature, deg F	60	^oF	---
	Standard Temperature, deg R	520	^oR	---
f.	Stack Base Elevation	560	ft	Sec 2
g.	Stack Diameter	19	ft	2
h.	Stack Height	150	ft	2

Calculate Stack Exit Velocity

$^oR = {^oF} + 460$ K = [(^oF - 32) / 1.8] + 273.15

Stack Gas Velocity (ft/sec) = Stack Gas Flow Rate (ACFM) / [Stack Cross Sectional Area (ft^2) x 60]

Stack Cross Sectional Area (ft^2) = π x (Stack Diameter (ft)/2)^2 283.53 ft^2

Stack Gas Velocity (m/sec) = Stack Gas Velocity (ft/sec) x 0.3048 (m/ft)

Unit				Stack Temp. (^oF)	Stack Temp. (^oR)	Stack Gas Flow Rate (ACFM)	
MPP				198	658	1,116,822	

Unit	Stack Inside Diameter (ft)	Stack Exit Velocity (ft/sec)	Stack Exit Velocity (m/sec)	Stack Inside Diameter (m)	Stack Height (ft)	Stack Height (m)	Stack Temp (°K)
MPP	19	65.65	20.01	5.80	150	45.70	365.37

APPENDIX B
South Coast AQMD FORMS

B.1 Form 400-XPP – Express Permit Processing Request Form

B.2 Form 400-CEQA – California Environmental Quality Act (CEQA) Applicability and Additional Information for Questions 1, 7 and 8

B.3 Form 400-A – Application Form for Permit or Plan Approval – Title V Permit Revision

B.4 Form 400-A – Application Form for Permit or Plan Approval – Gas Turbine with Duct Burner

B.5 Form 400-E-12 – Gas Turbine

B.6 Form 400-PS – Plot Plan and Stack Information Form and Attachment 1, Form 400-PS Attachment

B.7 Form 500-A2 – Title V Application Certification

B.8 Form 500-B – Title V List of Exempt Equipment

B.9 Form 500-C1 – Title V Compliance Status Report

B.10 Form 500-F1 (Title V) – Title IV Acid Rain Phase II Facility Information Summary

B.11 Form 500-H, Title V – Compliance Assurance Monitoring (CAM) Applicability Determination for Initial, Renewal, & Significant Permit Revision

South Coast Air Quality Management District

Form 400 - XPP

Express Permit Processing Request

Form 400-A, Form 400-CEQA and one or more 400-E-xx form(s) must accompany all submittals.

Mail To:
SCAQMD
P.O Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator To Appear On The Permit): Burbank City, Burbank Water & Power, SCPPA

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

Section B - Equipment Location Address

3. (•) **Fixed Location** ( ) **Various Location**
(For equipment operated at various locations, provide address of initial site.)

Street Address	164 West Magnolia Boulevard
City	Burbank
State	CA
Zip	91502-1720
Contact Name	Claudia Reyes
Title	Sr. Env. Engineer
Phone #	(818) 238-3510
Ext.	
Fax #	(818) 238-3535
E-Mail	CSReyes@burbankca.gov

Section C - Permit Mailing Address

4. Permit and Correspondence Information:
☑ Check here if same as equipment location address

Address	164 West Magnolia Boulevard
City	Burbank
State	CA
Zip	91502-1720
Contact Name	Claudia Reyes
Title	Sr. Env. Engineer
Phone #	(818) 238-3510
Ext.	
Fax #	(818) 238-3535
E-Mail	CSReyes@burbankca.gov

Section D - Authorization/Signature

I understand that the Expedited Permit Processing fees must be submitted at the time of application submittal, and that the application may be subject to additional fees per Rule 301. I understand that requests for Express Permit Processing neither guarantees action by any specific date nor does it guarantee permit approval; that Express Permit Processing is subject to availability of qualified staff; and that once Express Permit Processing has commenced, the expedited fees will not be refunded. I hereby certify that all information contained herein and information submitted with the application are true and correct.

5. Signature of Responsible Official: Frank Messineo	**6. Title of Responsible Official:** Power Production Manager
7. Print Name of Responsible Official: Frank Messineo	**8. Date:** 12/3/24
9. Phone #: (818) 238-3858	**10. Fax #:** (818) 238-3535

AQMD USE ONLY	APPLICATION TRACKING #		TYPE B C	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE: $		VALIDATION
ENG. A R DATE		ENG. A R DATE	CLASS I III	ASSIGNMENT Unit Engineer	CHECK/MONEY ORDER #	AMOUNT $	TRACKING #

South Coast Air Quality Management District
Form 400-CEQA
California Environmental Quality Act (CEQA) Applicability

South Coast AQMD

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project [1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines § 15060(a)]. Form 400-CEQA and the instructions for guidance on completing this form are available at http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms or http://www.aqmd.gov/home/permits/permit-application-forms. For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one Form 400-CEQA is necessary for the entire project. If you need assistance completing this form, contact Permit Services at (909) 396-3385.

Section A – Facility Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Burbank City, Burbank Water & Power, SCPPA

2. SCAQMD Facility ID: 128243

3. Project Description:
It is proposed to upgrade the existing MPP to provide operational capacity/output and energy efficiency improvements. An amendment to the CEC's AFC is under preparation.

Section B – Review For Exemption From Further CEQA Action

Check "Yes" or "No" as applicable. If "Yes" is checked for any question in Section B, skip Section C and proceed to page 2 and complete Section D - Signatures.

	Yes	No	Is this application for:
1.	○	⦿	A request for a change of operator only (without equipment or process change modifications)?
2.	○	⦿	A functionally identical permit unit replacement with no increase in equipment unit rating or emissions?
3.	○	⦿	A change of daily VOC permit limit to a monthly VOC permit limit?
4.	○	⦿	Equipment damaged as a result of a disaster during state of emergency?
5.	○	⦿	A Title V (e.g., SCAQMD Regulation XXX) permit renewal without equipment or process change modifications?
6.	○	⦿	A Title V administrative permit revision?
7.	○	⦿	The conversion of an existing permit into an initial Title V permit?

Section C – Review of Impacts Which May Trigger Further CEQA Review

Check "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	
1.	○	⦿	**Is this project specifically evaluated in a previously certified or adopted CEQA document?** If "Yes" is checked, attach a copy of the signed Notice of Determination to this form.
2.	○	⦿	**Is this project specifically exempted from CEQA by another entity (e.g., city or agency)?** If "Yes" is checked, attach a copy of the signed Notice of Exemption or other documentation from the entity to this form.
3.	○	⦿	**Is this project part of a larger project?** If "Yes" is checked, attach a separate sheet to briefly describe the larger project.
4.	○	⦿	**Will the project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound listed on Form 400-CEQA, Table 1 - Regulated Substances List and Threshold Quantities for Accidental Release Prevention** [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms]? If "Yes" is checked, attach a separate sheet to identify each hazardous material and corresponding quantity to be transported, stored, or used.
5.	○	⦿	**Will the project emit any air toxic listed on Form 400-CEQA, Table 2 - Other Air Toxics and Their Screening Levels** [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms] [2]? If "Yes" is checked, attach a separate sheet to identify each air toxic and corresponding quantity to be emitted.
6.	○	⦿	**Will the project require any demolition, excavation, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.

[2] Form 400-CEQA, Table 2 – Other Air Toxics and Their Screening Levels, contains a list of air toxics that either do not have a cancer potency (CP) or reference exposure level (REL) approved by the Office of Environmental Health Hazards Assessment (OEHHA) or have a combination of OEHHA-approved and non-approved CPs or RELs.

Section C – Review of Impacts Which May Trigger Further CEQA (concluded)

	Yes	No	
7.	○	⊙	**Will the project utilize a boiler, engine, or other combustion equipment that uses fuel (e.g., gasoline, diesel, natural gas, liquefied petroleum gas (LPG), or landfill gas)?** If "Yes" is checked, then the applicant will need to calculate the amount of GHGs from fuel use via on the Greenhouse Gas (GHG) online estimator [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms], and attaching the printout or by conducting hand calculations and providing the documentation. Refer to the Instructions for Form 400-CEQA for guidance.
8.	○	⊙	**Will the project utilize other types of equipment not addressed in Question 7 that require the use of, or will generate, any chemicals listed on Form 400-CEQA, Table 3 - Greenhouse Gases [http://www.aqmd.gov/home/regulations/ceqa/ceqa-permit-forms]?** If "Yes" is checked, attach a separate sheet to identify each equipment unit, the chemical name(s), and the quantity of each chemical identified.
9.	○	⊙	**Will the project include the open outdoor storage of dry bulk solid materials that could generate dust?** If "Yes" is checked, include a plot plan with the application package.
10.	○	⊙	**Will the project result in or make worse noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, landfills, materials recovery/recycling facilities (MRF), and compost materials or other types of greenwaste (e.g., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to SCAQMD Rule 402 – Nuisance.
11.	○	⊙	**Will the project cause an increase of emissions from marine vessels, trains and/or airplanes?**
12.	○	⊙	**Will the project increase demand for potable water at the facility by more than 262,820 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "Yes" answer to this question: 1) a project that generates steam; 2) a project that uses water as part of operating air pollution control equipment; 3) a project that requires water as part of the production process; 4) a project that requires a new, or the expansion of an existing, sewage treatment facility, new water lines, sewage lines, sewage hook-ups etc.; 5) a project where the water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; 6) a project that requires new or the expansion of existing, water supply and conveyance facilities; and, 7) a project that requires water to hydrotest pipelines, storage tanks etc. for structural integrity.
13.	○	⊙	**Will the project create an increase in the mass inflow of effluents to a public wastewater treatment facility that would require a new, or revision to an existing, National Pollutant Discharge Elimination System (NPDES) or other related permit at the facility?**
14.	○	⊙	**Will the project result in the need for more than 350 new employees?**
15.	○	⊙	**Will the project result in an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?**
16.	○	⊙	**Will the project result in an increase in customer traffic by more than 700 visits per day?**
17.	○	⊙	**Will the project result in temporary or permanent noise or vibration in excess of what is allowed by the applicable local noise ordinance?**
18.	○	⊙	**Will the project create a permanent need for new or additional solid waste disposal?** Check "No" if the projected potential amount of solid waste to be generated by the project is less than five tons per day.
19.	○	⊙	**Will the project create a permanent need for new or additional hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes to be generated by the project is less than 42 cubic yards per day (or equivalent in pounds).
20.	○	⊙	**Will the project include equipment that after installation or modification will change the visual character of the site and its surroundings or block views?**
21.	○	⊙	**Will the project have equipment that will create a new source of external lighting that will be visible at the property line?**

Section D – SIGNATURES

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

1. Signature of Responsible Official of Firm: Frank Messineo		2. Title of Responsible Official of Firm: Power Production Manager
3. Print Name of Responsible Official of Firm: Frank Messineo		4. Date Signed: 12/3/24
5. Phone # of Responsible Official of Firm: (818) 238-3858	6. Fax # of Responsible Official of Firm: (818) 238-3535	7. Email of Responsible Official of Firm: FMessineo@burbankca.gov
8. Signature of Preparer, (If prepared by person other than responsible official of firm): KNand		9. Title of Preparer: Principal
10. Print Name of Preparer: Krishna Nand, Ph.D.		11. Date Signed: 11/25/2024
12. Phone # of Preparer: (310) 539-0606	13. Fax # of Preparer: (310) 539-0606	14. Email of Preparer: krishnanand44@msn.com

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND ANY ATTACHMENTS WITH FORM 400-A.

Attachment to Form 400-CEQA, Section C- Review of Impacts Which May Trigger Further CEQA Review, Questions 1, 7 and 8 – Magnolia Power Project Upgrade 24

Response to Question 1: The Southern California Public Power Authority (SCPPA) owns the Magnolia Power Project (MPP), a combined cycle electrical power generating facility (CCGF). The MPP is located in the City of Burbank and is operated by the City of Burbank. The MPP electric power generating facility consists of a combined cycle Power Island. The power island includes a natural gas fired combustion turbine generator. The combustion turbine exhausts into a fired (using a duct burner) heat recovery steam generator (HRSG). Steam from the HRSG is admitted into a steam turbine generator (STG). The SCPPA is proposing to make upgrades to the existing MPP combustion system that will allow improved combustor turndown.

For the proposed upgrades to the MPP and the proposed changes in the MPP permit conditions, California Environmental Quality Act (CEQA) process is being performed as part of amending the California Energy Commission (CEC) Application for Certification. This amendment will be submitted to the California Energy Commission.

Response to Question 7: No new combustion equipment will be installed as part of the upgrades to the MPP. However, there will be an increase in the GHG emissions from upgrades to the MPP. The details of the GHG emission increase are provided in Section 3.

Response to Question 8: No new equipment will be installed at the MPP as part of the upgrades to the MPP. However, there will be an increase in the GHG emissions from upgrades to the MPP. The details of the GHG emission increase are provided in Section 3.

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Burbank City, Burbank Water & Power, SCPPA

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (•) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

Street Address: 164 West Magnolia Boulevard
City: Burbank, CA Zip: 91502-1720
Contact Name: Claudia Reyes Title: Sr. Env. Engineer
Phone #: (818) 238-3510 Ext. Fax #: (818) 238-3535
E-Mail: CSReyes@burbank.gov

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[X] Check here if same as equipment location address

Address: 164 West Magnolia Boulevard
City: Burbank, State: CA Zip: 91502-1720
Contact Name: Claudia Reyes Title: Sr. Env. Engineer
Phone #: (818) 238-3510 Ext. Fax #: (818) 238-3535
E-Mail: CSReyes@burbank.gov

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (•) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- ( ) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Refer to Title V Matrix)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (•) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 128243

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 01/05/2027
8b. Estimated End Date of Construction (mm/dd/yyyy): 04/15/2027
8c. Estimated Start Date of Operation (mm/dd/yyyy): 04/15/2027

9. Description of Equipment or Reason for Compliance Plan (list applicable rule): Title V Significant Permit Revision

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process) 0

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (•) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? (•) No ( ) Yes
If Yes, provide NOV/NC#:

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location? Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System) 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (•) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (•) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: Frank Messineo

18. Title of Responsible Official: Power Production Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (•) Yes

20. Print Name: Frank Messineo

21. Date: 12/3/24

22. Do you claim confidentiality of data? (If Yes, see instructions.) (•) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

South Coast AQMD

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit): Burbank City, Burbank Water & Power, SCPPA

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (•) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

164 West Magnolia Boulevard
Street Address

Burbank, CA 91502-1720
City, Zip

Claudia Reyes — Sr. Env. Engineer
Contact Name — Title

(818) 238-3510 Ext. — (818) 238-3535
Phone # — Fax #

E-Mail: CSReyes@burbank.gov

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
☒ Check here if same as equipment location address

164 West Magnolia Boulevard
Address

Burbank, CA 91502-1720
City, State, Zip

Claudia Reyes — Sr. Env. Engineer
Contact Name — Title

(818) 238-3510 Ext. — (818) 238-3535
Phone # — Fax #

E-Mail: CSReyes@burbank.gov

Section D - Application Type

6. The Facility Is: ( ) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V (•) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
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- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- (•) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number: 128243

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy): 01/05/2027

8b. Estimated End Date of Construction (mm/dd/yyyy): 04/15/2027

8c. Estimated Start Date of Operation (mm/dd/yyyy): 04/15/2027

9. Description of Equipment or Reason for Compliance Plan (list applicable rule): Gas Turbine

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process) 0

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center) (•) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? If Yes, provide NOV/NC#: (•) No ( ) Yes

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location? Electric Power Generation

14. What is your business primary NAICS Code? (North American Industrial Classification System) 221112

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ( ) No (•) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line? (•) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official: Frank Messineo

18. Title of Responsible Official: Power Production Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.) ( ) No (•) Yes

20. Print Name: Frank Messineo

21. Date: 12/3/24

22. Do you claim confidentiality of data? (If Yes, see instructions.) (•) No ( ) Yes

23. Check List: ☒ Authorized Signature/Date ☒ Form 400-CEQA ☒ Supplemental Form(s) (ie., Form 400-E-xx) ☒ Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED	PAYMENT TRACKING #	VALIDATION
			$		

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District
Form 400-E-12
Gas Turbine

South Coast AQMD

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator That Appears On Permit): Burbank City, Burbank Water & Power, SCPPA

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 164 West Magnolia Boulevard, Burbank, CA 91502-1720

◉ Fixed Location ○ Various Locations

Section B - Equipment Description

Turbine	**Manufacturer:** General Electric **Model:** PG7241FA **Serial No.:** ______ Size (based on Higher Heating Value - HHV): **Manufacturer Maximum Input Rating:** 2,103.00 MMBTU/hr ______ kWh **Manufacturer Maximum Output Rating:** ______ MMBTU/hr 211,720.00 kWh
Function (Check all that apply)	☒ Electrical Generation ☐ Driving Pump/Compressor ☐ Emergency Peaking Unit ☐ Steam Generation ☐ Exhaust Gas Recovery ☐ Other (specify): ______
Cycle Type	○ Simply Cycle ○ Regenerative Cycle ◉ Combined Cycle ○ Other (specify): ______
Combustion Type	○ Tubular ◉ Can-Annular ○ Annular
Fuel (Turbine)	☒ Natural Gas ☐ LPG ☐ Digester Gas* ☐ Landfill Gas* ☐ Propane ☐ Refinery Gas* ☐ Other*: ______ * (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).
Heat Recovery Steam Generator (HRSG)	Steam Turbine Capacity: 142 MW Low Pressure Steam Output Capacity: ______ lb/hr @ ______ °F High Pressure Steam Output Capacity: ______ lb/hr @ ______ °F Superheated Steam Output Capacity: ______ lb/hr @ ______ °F
Duct Burner	**Manufacturer:** Forney Corporation **Model:** Advantage Duct Burner Number of burners: 8 Rating of each burner (HHV): 73000000 Type: ◉ Low NOx (please attach manufacturer's specifications) ○ Other: ______ Show all heat transfer surface locations with the HRSG and temperature profile
Fuel (Duct Burner)	◉ Natural Gas ○ LPG ○ Digester Gas* ○ Landfill Gas* ○ Propane ○ Refinery Gas* ○ Other*: ______ * (If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content).

South Coast Air Quality Management District

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section B - Equipment Description (Cont.)

Air Pollution Control

(•) Selective Catalytic Reduction (SCR)*   ( ) Selective Non-Catalytic Reduction (SNCR)*

( ) Oxidation Catalyst*   ( ) Other (specify)*:________

( ) Steam/Water Injection: Injection Rate:________ lbs. water/lbs. fuel, or________ mole water/mole fuel

* Separate application is required.

Capital Cost:________ Installation Cost:________ Annual Operating Cost:________

Oxidation Catalyst Data (If Applicable)

Manufacturer: EmeraChem   Model: 10-COB-001A

Catalyst Dimensions: Length:____ ft.____ in. Width:____ ft.____ in. Height:____ ft.____ in.

Catalyst Cell Density:________ cells/sq.in.   Pressure Drop Across Catalyst:________

Manufacturer's Guarantee: CO Control Efficiency: 90.50 %   Catalyst Life: 5 yrs

VOC Control Efficiency: 52.40 %   Operating Temp. Range: 544.0 °F

Space Velocity (gas flow rate/catalyst volume): 209000.0   Area Velocity (gas flow/wetted catalyst surface area):________

VOC Concentration into Catalyst:________ PPMVD@ 15%O_2 CO Concentration inot Catalyst:________ PPMVD@ 15%O_2

Section C - Operation Information

On-line Emissions Data

Pollutants	Maximum Emissions Before Control *		Maximum Emissions After Control	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG			2	5.39
NOx			2	15.51
CO			2	9.44
PM_{10}				13.88
SOx				1.50
NH_3			5	14.33

* Based on temperature, fuel consumption, and MW output

Reference (attach data):

[X] Manufacturer Emission Data   [X] EPA Emission Factors   [X] AQMD Emission Factors   [ ] Source Test

Stack or Vent Data

Stack Height: 150 ft.________ in.   Stack Diameter: 19 ft.________ in.

Exhaust Temperature: 200 °F   Exhaust Pressure:________ inches water column

Exhaust Flow Rate:________ CFM   Oxygen Level:________ %

Form 400-E-12
Gas Turbine

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section C - Operation Information (cont.)

Startup Data	No. of Startups per day: ____ No. of Startups per year: 60 Duration of each startup: 6 hrs.
Shutdown Data	No. of Shutdowns per day: ____ No. of Shutdowns per year: 60 Duration of each Shutdown: 0.5 hrs.

Startup and Shutdown Emissions Data

Pollutants	Startup Emissions		Shutdown Emissions	
	PPM@15% O_2, dry	lb/hour	PPM@15% O_2, dry	lb/hour
ROG		35		20
NOx		518		29
CO		588		141
PM_{10}		83.25		6.94
SOx		9.04		0.75
NH_3				

Monitoring and Reporting

Continuous Emission Monitoring System (CEMS): CEMS Make: ____

CEMS Model: ____

Will the CEMS be used to measure both on-line and startup/shutdown emissions? ○ Yes ○ No

The following parameters will be continuously monitored:

☒ NOx ☒ CO ☐ O_2

☒ Fuel Flow Rate ☒ Ammonia Injection Rate ☐ Other (specify): ____

☐ Ammonia Stack Concentration: Ammonia CEMS Make: ____

Ammonia CEMS Model: ____

Operating Schedule

	hours/day	days/week	weeks/yr
Normal:	24	7	52
Maximum:	24	7	52

Section D - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: KMNand Date: 11/25/2024

Name: Krishna MNand, Ph.D.

Phone #: (310) 539-0606 Fax #: (310) 539-0606

Title: Principal Company Name: Env. Management Prof.

Email: krishnanand44@msn.com

Contact Info

Name: Claudia Reyes

Phone #: (818) 238-3510 Fax #: (818) 238-3535

Title: Sr. Env. Manager Company Name: Burbank Water & Power

Email: CSReyes@burbankca.gov

THIS IS A PUBLIC DOCUMENT

Pursuant to the California Public Records Act, your permit application and any supplemental documentation are public records and may be disclosed to a third party. If you wish to claim certain limited information as exempt from disclosure because it qualifies as a trade secret, as defined in the District's Guidelines for Implementing the California Public Records Act, you must make such claim at the time of submittal to the District.

Check here if you claim that this form or its attachments contain confidential trade secret information. ☐

South Coast Air Quality Management District

Form 400-PS

Plot Plan And Stack Information Form

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Form 400A and Form 400-CEQA.

South Coast AQMD

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator To Appears On The Permit): Burbank City, Burbank Water & Power, SCPPA

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 164 West Magnolia Boulevard, CA 91502-1720

(•) Fixed Location ( ) Various Locations

Section B - Location Data

Plot Plan: Please attach a site map for the project with distances and scales. Identify and locate the proposed equipment on the map. A copy of the appropriate Thomas Brothers page, a web-based map, or a sketch that shows the major streets and location of the equipment is acceptable.

Location of Schools Nearby

Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? ( ) Yes (•) No

If yes, please provide name(s) of school(s) below:

School Name: ______ School Name: ______

School Address: ______ School Address: ______

Distance from stack or equipment vent to the outer boundary of the school: ______ feet

Distance from stack or equipment vent to the outer boundary of the school: ______ feet

CA Health & Safety Code 42301.9: "School" means any public or private school used for purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes.

Population Density: (•) Urban ( ) Rural (<50% of land within 3 km radius accounted for by urban land use categories, i.e., multi-family dwelling or industrial.)

Zoning Classification

( ) Mixed Use Residential Commercial Zone (M-U) ( ) Service and Professional Zone (C-S) ( ) Medium Commercial (C-3)

( ) Heavy Commercial (C-4) (•) Commercial Manufacturing (C-M)

Section C - Emission Release Parameters - Stacks, Vents

Stack Data

Stack Height: 150.00 feet (above ground level)

What is the height of the closest building nearest the stack? 83 feet

Stack Inside Diameter: 228.00 inches

Stack Flow: ______ acfm

Stack Temperature: 200 °F

Rain Cap Present: ( ) Yes (•) No

Stack Orientation: (•) Vertical ( ) Horizontal

If the stack height is less than 2.5 times the closest building height (H), please provide information on any building within 5xH distance from the stack (attach additional sheet if necessary):

Building #/Name: See Attachment 1 Building #/Name: ______

Building Height: ______ feet (above ground level) Building Height: ______ feet (above ground level)

Building Width: ______ feet Building Width: ______ feet

Building Length: ______ feet Building Length: ______ feet

Receptor Distance From Equipment Stack or Roof Vents/Openings

Distance to nearest residence or sensitive receptor*: 900 feet

Distance to nearest business: 400 feet

Building Information

Are the emissions released from vents and/or openings from a building? ( ) Yes (•) No

If yes, please provide:

Building #/Name: ______ Building Width: ______ feet

Building Height: ______ feet (above ground level) Building Length: ______ feet

*AQMD Rule 1470 defines SENSITIVE RECEPTOR as meaning any residence including private homes, condominiums, apartments, and living quarters, schools as defined under paragraph (b)(57), preschools, daycare centers and health facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.

South Coast Air Quality Management District

Form 400-PS

Plot Plan And Stack Information Form

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Form 400A and Form 400-CEQA.

Section D - Authorization/Signature			
I hereby certify that all information contained herein and information submitted with this application is true and correct.			
Signature of Preparer: [signature]	Title of Preparer: Principal	Preparer's Phone #: (310) 539-0606 Preparer's Email: krishnanand44@msn.com	
Contact Person: Claudia Reyes Contact's Email: CSReyes@burbank.gov		Contact's Phone#: (818) 238-3510 Contact's Fax#: (818) 238-3535	Date Signed: 11/25/24

THIS IS A PUBLIC DOCUMENT

Pursuant to the California Public Records Act, your permit application and any supplemental documentation are public records and may be disclosed to a third party. If you wish to claim certain limited information as exempt from disclosure because it qualifies as a trade secret, as defined in the District's Guidelines for Implementing the California Public Records Act, you must make such claim at the time of submittal to the District.

Check here if you claim that this form or its attachments contain confidential trade secret information. ☐

Attachment 1

Burbank City, Burbank Water & Power, SCPPA, MPP Upgrade Project 24

Form 400-PS Attachment - Details of Buildings Included in Building Downwash Calculations

Modeling for Magnoila Power Project

Bldg No.	Building Name	Height, ft	Length, ft	Width, ft	Diameter, ft	
1	ADMIN1	43	230	115		
2	WATER	43	79	59		
3	STORE1	18	184	43		
4	WHSE	31	302	125		
5	OLIVE1	87	171	164		
6	OLIVE2	87	177	112		
7	OLIVE3	87	164	59		
8	OLIVE4	87	164	66		
9	OLIVECT1	23	197	66		
10	STORE2	30	213	30		
11	OLIVECT2	37	400	115		
12	STORE3	25	95	43		
13	SHOP1	30	79	33		
14	SHOP2	30	180	128		
15	MAG3_4	55	197	164		
16	ADMIN2	43	115	69		
17	CT	42	289	49		
18	STEAM	72	164	108		
19	INTAKE	85	33	30		
20	TURBINE	21	36	20		
21	GEN	60	46	36		
22	EXP	36	59	30		
23	HRSG	83	95	30		
24	STORE4	21	105	75		
25	STORE5	18	312	33		
26	STORE6	30	82	16		
27	STORE7	30	134	46		
28	STORE8	30	141	66		
29	OFFSITE	20	492	98		
30	TANK1				39	
31	TANK2				39	

South Coast Air Quality Management District
Form 500-A2
Title V Application Certification

South Coast AQMD

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): Burbank City, Burbank Water & Power, SCPPA

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

3. This Certification is submitted with a (Check one):
- a. (●) Title V Application (Initial, Revision or Renewal)
- b. ○ Supplement/Correction to a Title V Application
- c. ○ MACT Part 1

4. Is Form 500-C2 included with this Certification? ○ Yes (●) No

Section II - Responsible Official Certification Statement

*Read each statement carefully and check each that applies – **You must check 3a or 3b.***

1. For Initial, Permit Renewal, and Administrative Application Certifications:

a. (●) The facility, including equipment that are exempt from written permit per Rule 219, is currently operating and will continue to operate in compliance with all applicable requirement(s) identified in Section II and Section III of Form 500-C1,

i. ☐ except for those requirements that do not specifically pertain to such devices or equipment and that have been identified as "Remove" on Section III of Form 500-C1.

ii. ☐ except for those devices or equipment that have been identified on the completed and attached Form 500-C2 that will not be operating in compliance with the specified applicable requirement(s).

b. ○ The facility, including equipment that are exempt from written permit per Rule 219, will meet in a timely manner, all applicable requirements with future effective dates.

2. For Permit Revision Application Certifications:

a. ☑ The equipment or devices to which this permit revision applies, will in a timely manner comply with all applicable requirements identified in Section II and Section III of Form 500-C1.

3. For MACT Hammer Certifications:

a. ○ The facility is subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63), also known as the MACT "hammer." The following information is submitted with a Title V application to comply with the Part 1 requirements of Section 112(j).

b. (●) The facility is not subject to Section 112(j) of the Clean Air Act (Subpart B of 40 CFR part 63).

Section III - Authorization/Signature

I certify under penalty of law that I am the responsible official for this facility as defined in AQMD Regulation XXX and that based on information and belief formed after reasonable inquiry, the statement and information in this document and in all attached application forms and other materials are true, accurate, and complete.

1. Signature of Responsible Official: Frank Messineo	2. Title of Responsible Official: Power Production Manager
3. Print Name: Frank Messineo	4. Date: 12/3/24
5. Phone #: (818) 238-3858	6. Fax #: (818) 238-3535

7. Address of Responsible Official:

Street #	City	State	Zip
164 West Magnolia Boulevard	Burbank	CA	91502

Acid Rain Facilities Only: Please Complete Section IV

Acid Rain facilities must certify their compliance status of the devices subject to applicable requirements under Title IV by an individual who meets the definition of Designated (or Alternate) Representative in 40 CFR Part 72.

Section IV - Designated Representative Certification Statement	
***For Acid Rain Facilities Only*: I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.**	
1. Signature of Designated Representative or Alternate: Frank Messineo	2. Title of Designated Representative or Alternate: Power Production Manager
3. Print Name of Designated Representative or Alternate: Frank Messineo	4. Date: 12/3/24
5. Phone #: (818) 238-3858	6. Fax #: (818) 238-3535
7. Address of Designated Representative or Alternate: 164 West Magnolia Boulevard (Street #), Burbank (City), CA (State), 91502 (Zip)	

South Coast Air Quality Management District

Form 500-B

Title V List of Exempt Equipment

South Coast AQMD

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Use this form for all application submittals requesting an initial Title V permit or permit renewal. If you are applying for a permit revision, you may also use this form to have your exempt equipment listing updated prior to renewing your permit.

This form is designed to summarize all of the equipment at a facility that is exempt per SCAQMD Rule 219 from SCAQMD permit requirements (e.g., I.C. Engines ≤ 50 BHP, Boilers < 2 MM BTU/hr etc.). This equipment can be listed according to category. However, if there is a specific device that is vented to control equipment, then the equipment must be listed separately. Trivial activities listed on the back of this form or the Technical Guidance Document do not have to be listed on this form. Note: If your facility is in the RECLAIM program, it is not necessary to repeat any equipment currently listed in Appendix A of the RECLAIM permit.

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): Burbank City, Burbank Water & Power, SCPPA

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

3. Check box if facility is in RECLAIM program: ☒

4. Provide Current Permit Issue Date: 02/16/2022

5. Permit Revision No.: 29

Section II - Summary of Equipment Exempt from Permit Requirements (Including Portable)

Exempt Equipment Description [e.g., Small Boilers (75,000 BTU/hr-2,000,000 BTU/hr)]	Venting to Control (Device# or Application#)	Control Device Description	Basis for Exemption [e.g., Rule 219 (b)(2), 05/19/00]	Source Specific Rule [e.g., Rule 1146.2]
Cooling Towers			219(d)(4)	222
Coating Equipment - Architectural			219(d)(12)(1)	1113, 1171
Comfort Air Conditioning			219(d)(4)(a)	1415, 1415.1

Trivial Activities	
• Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources • Air-conditioning units used for human comfort that do not have applicable requirements under Title VI of the Act • Ventilating units used for human comfort that do not exhaust air pollutants into the ambient air from any manufacturing/industrial or commercial process • Non-commercial food preparation • Consumer use of office equipment and products, not including printers or businesses primarily involved in photographic reproduction • Janitorial services and consumer use of janitorial products • Internal combustion engines used for landscaping purposes • Laundry activities, except for dry-cleaning and steam boilers • Bathroom/toilet vent emissions • Emergency (backup) electrical generators at residential locations • Tobacco smoking rooms and areas • Blacksmith forges • Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification[1] • Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification • Portable electrical generators that can be moved by hand from one location to another[2] • Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic • Brazing, soldering and welding equipment, and cutting torches related to manufacturing and construction activities that do not result in emission of HAP metals[3] • Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents[4] • Routine calibration and maintenance of laboratory equipment or other analytical instruments • Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis • Hydraulic and hydrostatic testing equipment • Environmental chambers not using hazardous air pollutant (HAP) gasses • Shock chambers • Humidity chambers • Solar simulators	• Fugitive emission related to movement of passenger vehicles, provided any required fugitive dust control plan or its equivalent is submitted • Process water filtration systems and demineralizers • Demineralized water tanks and demineralizer vents Air compressors and pneumatically operated equipment, including hand tools • Batteries and battery charging stations, except at battery manufacturing plants • Storage tanks, vessels and containers holding or storing liquid substances that will not emit any VOC or HAP[5] • Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized • Equipment used to mix and package soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized • Drop hammers or hydraulic presses for forging or metalworking • Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment • Vents from continuous emissions monitors and other analyzers • Natural gas pressure regulator vents, excluding venting at oil and gas production facilities • Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation • Equipment used for surface coating, painting, dipping or spraying operations, except those that will emit VOC or HAP • CO_2 lasers, used only on metals and other materials which do not emit HAP in the process • Consumer use of paper trimmers/binders • Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substance being processed in the ovens or autoclaves or the boilers delivering the steam • Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants • Laser trimmers using dust collection to prevent fugitive emissions • Boiler water treatment operations, not including cooling towers • Oxygen scavenging (de-aeration) of water • Ozone generators • Fire suppression systems • Emergency road flares • Steam vents and safety relief valves • Steam leaks • Steam cleaning operations • Steam sterilizers

[1] Cleaning and painting activities qualify as trivial if they are not subject to VOC or HAP control requirements. Asphalt batch plant owners/operators must still get a permit if otherwise required.

[2] "Moved by hand" means it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance or device.

[3] Brazing, soldering and welding equipment, and cutting torches related to manufacturing and construction activities that emit HAP metals are more appropriate for treatment as unpermitted equipment. Brazing, soldering, welding and cutting torches directly related to plant maintenance and upkeep and repair or maintenance shop activities that emit HAP metals are treated as trivial and listed separately in this appendix.

[4] Many lab fume hoods or vents might qualify for treatment as unpermitted equipment.

[5] Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.

South Coast Air Quality Management District

Form 500-C1

Title V Compliance Status Report

To provide the compliance status of your facility with applicable federally enforceable requirements and identify other local-only requirements, complete this form and attach it to a completed compliance certification Form 500-A2. As appropriate, all submittals of Form 500-C2 as appropriate should also be attached to this form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): Burbank City, Burbank Water & Power

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

PROCEDURES FOR DETERMINING COMPLIANCE STATUS

1. **Equipment verification:** Review the list of pending applications, and either the preliminary Title V facility permit or the list of current permits to operate that the AQMD provided you, to determine if they completely and accurately describe all equipment operating at the facility. Attach a statement to describe any discrepancies.
2. **Identify applicable requirements*:** Use the checklist in Section II to identify all applicable and federally-enforceable local, state, and federal rules and regulations, test methods, and monitoring, recordkeeping and reporting (MRR) requirements that apply to any equipment or process (including equipment exempt from a permit by Rule 219) at your facility.
   The potential applicable requirements, test methods and MRR requirements are identified and listed adjacent to each given equipment/process description. Check off each box adjacent to the corresponding requirement as it applies to your particular equipment/process.
   Note: Even if there is only one piece of equipment that is subject to a particular requirement, the appropriate box should be checked.
3. **Identify additional applicable requirements*:** Use Section III to identify any additional requirements not found in Section II. Section II is not a complete list of all applicable requirements. It does not include recently adopted NESHAP regulations by EPA or recent amendments to AQMD rules. Do not add rules listed in Section V here.
4. **Identify any requirements that do not apply to a specific piece of equipment or process:** Also use Section III to identify any requirements that are listed in Section II but that do not apply to a specific piece of equipment or process. Fill out Section III of this form and attach a separate sheet to explain the reason(s) why the identified rules do not apply. Note: Listing any requirement that does not apply to a specific piece of equipment will not provide the facility with a permit shield unless one is specifically requested by completing Form 500-D and is approved by AQMD.
5. **Identify SIP-approved rules that are not current AQMD rules:** Use Section IV to identify older versions of current AQMD rules that are the EPA-approved versions in the State Implementation Plan (SIP), and that are still applicable requirements as defined by EPA. The facility is not required to certify compliance with the items checked in Section IV provided that the non-SIP approved rule in Section II is at least as stringent as the older SIP-approved version in Section IV. **
6. **Identify Local-Only Enforceable Regulatory Requirements:** Use Section V to identify AQMD rules that are not SIP-approved and are not federally enforceable.
7. **Determine compliance:** Determine if all equipment and processes are complying with all requirements identified in Sections II and III. If each piece of equipment complies with all applicable requirements, complete and attach Form 500-A2 to certify the compliance status of the facility. If any piece of equipment is not in compliance with any of the applicable requirements, complete and attach Form 500-C2 in addition to Form 500-A2.

* The following AQMD rules and regulations are not required to be included in Section II and do not have to be added to Section III: Regulation I, List and Criteria in Regulation II, Rule 201, Rule 201.1, Rule 202, Rule 203, Rule 205, Rule 206, Rule 207, Rule 208, Rule 209, Rule 210, Rule 212, Rule 214, Rule 215, Rule 216, Rule 217, Rule 219, Rule 220, Rule 221, Regulation III, Regulation V, Regulation VIII, Regulation XII, Regulation XV, Regulation XVI, Regulation XIX, Regulation XXI, Regulation XXII, and Regulation XXX.

** Emission units adversely affected by the gap between current and SIP-approved versions of rules may initially be placed in a non-Title V portion of the permit

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ All Air Pollution Control Equipment Using Combustion (RECLAIM & non-RECLAIM sources)	☐ Rule 480 (10/07/77)	N/A	N/A
☐ All Coating Operations (12/15/00)	☐ Rule 442	☐ Rule 442(f)	☐ Rule 442(g)
☐ All Combustion Equipment, ≥ 555 Mmbtu/Hr (except for NOx RECLAIM sources)	☐ Rule 474 (12/04/81)	☐ AQMD TM 7.1 or 100.1	
☑ All Combustion Equipment Except Internal Combustion Engines (RECLAIM & non-RECLAIM sources)	☑ Rule 407 (04/02/82) ☑ Rule 409 (08/07/81)	☐ AQMD TM 100.1 or 10.1, 307-91 ☐ AQMD TM 5.1, 5.2, or 5.3	
☑ All Combustion Equipment Using Gaseous Fuel (except SOx RECLAIM sources)	☑ Rule 431.1 (06/12/98)	☐ Rule 431.1(f)	☐ Rule 431.1(d) & (e)
☐ All Combustion Equipment Using Liquid Fuel (except SOx RECLAIM sources)	☐ Rule 431.2 (09/15/00)	☐ Rule 431.2(g)	☐ Rule 431.2(f)
☐ All Combustion Equipment Using Fossil Fuel (except SOx RECLAIM sources)	☐ Rule 431.3 (05/07/76)		
☑ All Equipment	☑ Rule 401 (11/09/01) ☑ Rule 405 (02/07/86) ☑ Rule 408 (05/07/76) ☑ Rule 430 (07/12/96) ☑ Rule 701 (06/13/97) ☑ New Source Review, BACT ☐ Rule 1703 (10/07/88) ☐ 40 CFR68 - Accidental Release Prevention	☑ California Air Resources Board Visible Emission Evaluation ☐ AQMD TM 5.1, 5.2, or 5.3 N/A See Applicable Subpart	☑ Rule 430(b) See Applicable Subpart
☑ All Equipment Processing Solid Materials	☑ Rule 403 (06/03/05)	☐ Rule 403(d)(3)	☐ Rule 403(f)
☑ All Equipment With Exhaust Stack (except cement kilns subject to Rule 1112.1)	☑ Rule 404 (02/07/86)	☑ AQMD TM 5.1, 5.2, or 5.3	
☑ All Facilities Using Solvents to Clean Various Items or Equipment	☑ Rule 109 (05/02/03) ☑ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART T	☑ Rule 109(g) ☑ Rule 1171(e) See Applicable Subpart	☑ Rule 109(c) ☑ Rule 1171(c)(6) See Applicable Subpart
☑ All RECLAIM Equipment (NOx & SOx)	☑ Reg. XX - RECLAIM	☐ Rule 2011, App. A (05/06/05) ☑ Rule 2012, App. A (05/06/05)	☐ Rule 2011, App. A (05/06/05) ☑ Rule 2012, App. A (05/06/05)
☑ Abrasive Blasting	☑ Rule 1140 (08/02/85)	☑ Rule 1140(d) & (e), AQMD Visible Emission Method	

KEY ABBREVIATIONS:	**Reg.** = AQMD Regulation **Rule** = AQMD Rule	**App.** = Appendix **AQMD TM** = AQMD Test Method	**CFR** = Code of Federal Regulations **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Aggregate and Related Operations	☐ Rule 1157 (09/08/06)	☐ Rule 1157(f)	☐ Rule 1157(e)
☐ Appliances Containing Ozone Depleting Substances (except Motor Vehicle Air Conditioners): Manufacturing, Repair, Maintenance, Service, & Disposal	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Asphalt	See Manufacturing, Asphalt Processing & Asphalt Roofing		
☐ Asphalt Concrete/Batch Plants	☐ 40 CFR60 SUBPART I	See Applicable Subpart	See Applicable Subpart
☐ Benzene Emissions, Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, & Coke By-Product Recovery Plants	☐ Rule 1173 (02/06/09) ☐ Rule 1176 (09/13/96) ☐ 40 CFR61 SUBPART L ☐ 40 CFR61 SUBPART Y ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART CC	☐ Rule 1173(j) ☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1173(i) ☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Benzene Transfer Operations	☐ Rule 1142 (07/19/91) ☐ 40 CFR61 SUBPART BB ☐ 40 CFR63 SUBPART Y	☐ Rule 1142(e) See Applicable Subpart See Applicable Subpart	☐ Rule 1142(h) See Applicable Subpart See Applicable Subpart
☐ Benzene Waste Operations	☐ Rule 1176 (09/13/96) ☐ 40 CFR61 SUBPART FF ☐ 40 CFR63 SUBPART CC	☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart	☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart
☐ Beryllium Emissions	☐ 40 CFR61 SUBPART C	See Applicable Subpart	See Applicable Subpart
☐ Beryllium Emissions, Rocket Motor Firing	☐ 40 CFR61 SUBPART D	See Applicable Subpart	See Applicable Subpart
☐ Boiler, < 5 Mmbtu/Hr (non-RECLAIM sources)	☐ Rule 1146.1 (09/05/08) ☐ Rule 1146.2 (05/05/06) ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146.1(d) N/A See Applicable Subpart	☐ Rule 1146.1(c)(2) & (c)(3) N/A See Applicable Subpart
☐ Boiler, < 5 Mmbtu/Hr (RECLAIM sources)	☐ Rule 1146.1 (09/05/08) - excluding NOx requirements ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146.1(d) See Applicable Subpart	☐ Rule 1146.1(c)(2) & (c)(3) See Applicable Subpart

KEY ABBREVIATIONS:	**Reg.** = AQMD Regulation **Rule** = AQMD Rule	**App.** = Appendix **AQMD TM** = AQMD Test Method	**CFR** = Code of Federal Regulations **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Boiler, ≥ 5 Mmbtu/Hr (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 475 (08/07/78) ☐ Rule 476 (10/08/76) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBPART D ☐ 40 CFR60 SUBPART Da ☐ 40 CFR60 SUBPART Dc ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 7.1, 100.1, 5.1, 5.2, or 5.3 ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Boiler, ≥ 5 Mmbtu/Hr (RECLAIM sources)	☐ Rule 475 (08/07/78) ☐ Rule 476 (10/08/76) - excluding NOx requirements ☐ Rule 1146 (09/05/08) - excluding NOx requirements ☐ Rule 2011 (05/06/05) ☐ or Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART D ☐ 40 CFR60 SUBPART Da ☐ 40 CFR60 SUBPART Dc ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 7.1, 100.1, 5.1, 5.2, or 5.3 ☐ Rule 1146(d) ☐ Rule 2011, App. A (05/06/05) or ☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	 ☐ Rule 1146(c)(6) & (c)(7) ☐ Rule 2011, App. A (05/06/05) or ☐ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Boiler, Petroleum Refining (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 431.1 (06/12/98) ☐ Rule 475 (08/07/78) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBBPART J ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ Rule 431.1(f) ☐ AQMD TM 5.1, 5.2, or 5.3 ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 431.1(d) & (e) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart

KEY ABBREVIATIONS:	**Reg.** = AQMD Regulation **Rule** = AQMD Rule	**App.** = Appendix **AQMD TM** = AQMD Test Method	**CFR** = Code of Federal Regulations **CCR** = California Code of Regulations

Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Boiler, Petroleum Refining (RECLAIM sources)	☐ Rule 1146 (09/05/08) - excluding NOx requirements ☐ Rule 2011 (05/06/05) ☐ or Rule 2012 (05/06/05) ☐ 40 CFR60 SUBPART J ☐ 40 CFR63 SUBPART DDDDD	☐ Rule 1146(d) ☐ Rule 2011, App. A (05/06/05) ☐ or Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart	☐ Rule 1146(c)(6) & (c)(7) ☐ Rule 2011, App. A (05/06/05) ☐ or Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart
☐ Boilers, Electric Utility (non-RECLAIM sources)	☐ Rule 218 (05/14/99) ☐ Rule 429 (12/21/90) ☐ Rule 1135 (07/19/91) ☐ 40 CFR60 SUBPART Db ☐ 40 CFR63 SUBPART DDDDD	☐ AQMD TM 100.1 N/A ☐ Rule 1135(e) See Applicable Subpart See Applicable Subpart	☐ Rule 218(e) & (f) ☐ Rule 429(d) ☐ Rule 1135(e) See Applicable Subpart See Applicable Subpart
☑ Boilers, Electric Utility (RECLAIM sources)	☑ Rule 2012 (05/06/05) ☑ 40 CFR60 SUBPART Db ☐ 40 CFR63 SUBPART DDDDD	☑ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart	☑ Rule 2012, App. A (05/06/05) See Applicable Subpart See Applicable Subpart
☐ Bulk Loading Of Organic Liquids	☐ Rule 462 (05/14/99) ☐ 40 CFR60 SUBPART XX ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART BBBBBB ☐ 40 CFR63 SUBPART EEEE	☐ Rule 462(f) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 462(g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Cadmium Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Calciner, Mineral Industries	☐ 40 CFR60 SUBPART UUU	See Applicable Subpart	See Applicable Subpart
☐ Calciner, Petroleum Coke	☐ Rule 477 (04/03/81) ☐ Rule 1119 (03/02/79) ☐ 40 CFR63 SUBPART L	☐ AQMD Visible Emissions, AQMD TM 5.1, 5.2, or 5.3 ☐ AQMD TM 6.1 or 100.1 See Applicable Subpart	See Applicable Subpart
☐ Charbroilers	☐ Rule 1174 (10/05/90) ☐ Rule 1138 (11/14/97)	☐ AQMD Test Protocol ☐ Rule 1138(g)	☐ Rule 1138(d)
☐ Chrome Plating & Chromic Acid Anodizing Operation	☐ Rule 1426 (05/02/03) ☐ Rule 1469 (12/05/08)	☐ Rule 1469(e)	☐ Rule 1426(e) ☐ Rule 1469(g), (j) & (k)

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Adhesive Application Operation	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1168 (01/07/05) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART RR	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1168(f) & (e) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1168(d) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Aerospace Assembly & Component Manufacturing	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1124 (09/21/01) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART GG	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1124(e) & (f) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1124(j) & (d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Graphic Arts (Gravure, Letter Press, Flexographic & Lithographic Printing Process, Etc.)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1130 (10/08/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART QQ ☐ 40 CFR60 SUBPART RR ☐ 40 CFR60 SUBPART FFF ☐ 40 CFR60 SUBPART VVV ☐ 40 CFR63 SUBPART KK ☐ 40 CFR63 SUBPART JJJJ	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1130(h) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1130(e) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Magnet Wire Coating	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1126 (01/13/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1126(d) ☐ Rule 1132(f) ☐ Rule 1171(e)	☐ Rule 109(c) ☐ Rule 1126(c)(4) ☐ Rule 1132(g) ☐ Rule 1171(c)(6)

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Marine Coating (Except for recreational equipment)	☐ Rule 109 (05/02/03)	☐ Rule 109(g)	☐ Rule 109(c)
	☐ Rule 481 (01/11/02)	☐ Rule 481(d)	
	☐ Rule 1106 (01/13/95)	☐ Rule 1106(e)	☐ Rule 1106(c)(5)
	☐ Rule 1132 (05/05/06)	☐ Rule 1132(f)	☐ Rule 1132(g)
	☐ Rule 1171 (05/01/09)	☐ Rule 1171(e)	☐ Rule 1171(c)(6)
	☐ 40 CFR63 SUBPART II	See Applicable Subpart	See Applicable Subpart
☐ Coating Operation, Metal Coating	☐ Rule 109 (05/02/03)	☐ Rule 109(g)	☐ Rule 109(c)
	☐ Rule 481 (01/11/02)	☐ Rule 481(d)	
	☐ Rule 1107 (01/06/06)	☐ Rule 1107(e)	☐ Rule 1107(j)
	☐ Rule 1132 (05/05/06)	☐ Rule 1132(f)	☐ Rule 1132(g)
	☐ Rule 1171 (05/01/09)	☐ Rule 1171(e)	☐ Rule 1171(c)(6)
	☐ 40 CFR60 SUBPART EE	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART SS	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART NNNN	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART MMMM	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART RRRR	See Applicable Subpart	See Applicable Subpart
☐ Coating Operation, Metal Containers, Closure, & Coil Coating Operations	☐ Rule 109 (05/02/03)	☐ Rule 109(g)	☐ Rule 109(c)
	☐ Rule 481 (01/11/02)	☐ Rule 481(d)	
	☐ Rule 1125 (03/07/08)	☐ Rule 1125(e)	☐ Rule 1125(c)(6)
	☐ Rule 1132 (05/05/06)	☐ Rule 1132(f)	☐ Rule 1132(g)
	☐ Rule 1171 (05/01/09)	☐ Rule 1171(e)	☐ Rule 1171(c)(6)
	☐ 40 CFR60 SUBPART TT	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART WW	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART KKKK	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART SSSS	See Applicable Subpart	See Applicable Subpart
☐ Coating Operation, Motor Vehicle & Mobile Equipment Non-Assembly Line Coating Operation	☐ Rule 109 (05/02/03)	☐ Rule 109(g)	☐ Rule 109©
	☐ Rule 481 (01/11/02)	☐ Rule 481(d)	
	☐ Rule 1132 (05/05/06)	☐ Rule 1132(f)	☐ Rule 1132(g)
	☐ Rule 1151 (12/02/05)	☐ Rule 1151(h)	☐ Rule 1151(f)
	☐ Rule 1171 (05/01/09)	☐ Rule 1171(e)	☐ Rule 1171(c)(6)

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Motor Vehicle Assembly Line	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1115 (05/12/95) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART MM ☐ 40 CFR63 SUBPART IIII	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1115(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1115(g) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Paper, Fabric, & Film Coating Operations	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1128 (03/08/96) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART VVV ☐ 40 CFR63 SUBPART OOOO	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1128(f) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1128(e) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Plastic, Rubber, & Glass	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1145 (12/04/09) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR60 SUBPART TTT ☐ 40 CFR63 SUBPART NNNN ☐ 40 CFR63 SUBPART PPPP	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1145(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1145(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Coating Operation, Pleasure Craft	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1106.1 (02/12/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1106.1(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1106.1(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Coating Operation, Screen Printing	☐ Rule 109 (05/02/03) ☐ Rule 1130.1 (12/13/96) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART KK	☐ Rule 109(g) ☐ Rule 1130.1(g) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1130.1(c)(5) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☑ Coating Operation, Use Of Architectural Coating (Stationary Structures)	☑ Rule 109 (05/02/03) ☑ Rule 481 (01/11/02) ☑ Rule 1113 (07/13/07) ☐ Rule 1132 (05/05/06) ☑ Rule 1171 (05/01/09)	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1113(e) ☐ Rule 1132(f) ☐ Rule 1171(e)	☐ Rule 109(c) ☐ Rule 1132(g) ☑ Rule 1171(c)(6)
☐ Coating Operation, Wood Flat Stock	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1104 (08/13/99) ☐ Rule 1132 (05/05/06) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART II	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1104(e) ☐ Rule 1132(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1104(d) ☐ Rule 1132(g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coating Operation, Wood Products (Commercial Furniture, Cabinets, Shutters, Frames, Toys)	☐ Rule 109 (05/02/03) ☐ Rule 481 (01/11/02) ☐ Rule 1132 (05/05/06) ☐ Rule 1136 (06/14/96) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART JJ	☐ Rule 109(g) ☐ Rule 481(d) ☐ Rule 1132(f) ☐ Rule 1136(f) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1132(g) ☐ Rule 1136(d) & (g) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Coater	See Coating Operations		
☐ Columns	See Petroleum Refineries, Fugitive Emissions		
☐ Composting Operation	☐ Rule 1133 (01/10/03) ☐ Rule 1133.1 (01/10/03) ☐ Rule 1133.2 (01/10/03)	☐ Rule 1133.1(e) ☐ Rule 1133.2(g)	☐ Rule 1133.1(d) ☐ Rule 1133.2(h)
☐ Compressors	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Concrete Batch Plants	See Nonmetallic Mineral Processing Plants		
☐ Consumer Product Manufacturing	See Manufacturing, Consumer Product		
☐ Cooling Tower, Hexavalent Chromium	☐ 40 CFR63 SUBPART Q	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Copper Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Crude Oil Production	See Oil Well Operations		
☐ Crusher	See Nonmetallic Mineral Processing Plants		
☐ Dairy Farms and Related Operations	☐ Rule 1127 (08/06/04)	☐ Rule 1127(h)	☐ Rule 1127(g)
☐ Degreasers	☐ Rule 109 (05/02/03) ☐ Rule 1122 (05/01/09) ☐ Rule 1171 (05/01/09) ☐ 40 CFR63 SUBPART T	☐ Rule 109(g) ☐ Rule 1122(h) ☐ Rule 1171(e) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1122(i) ☐ Rule 1171(c)(6) See Applicable Subpart
☐ Dry Cleaning, Perchloroethlyene	☐ Rule 1421 (12/06/02)	☐ Rule 1421(e) & (i)	☐ Rule 1421(g) & (h)
☐ Dry Cleaning, Petroleum Solvent	☐ Rule 109 (05/02/03) ☐ Rule 1102 (11/17/00) ☐ 40 CFR60 SUBPART JJJ	☐ Rule 109(g) ☐ Rule 1102(g) See Applicable Subpart	☐ Rule 109(c) ☐ Rule 1102(f) See Applicable Subpart
☐ Dryers, Mineral Industries	☐ 40 CFR60 SUBPART UUU	See Applicable Subpart	See Applicable Subpart
☐ Ethylene Oxide Sterilizer	See Sterilizer, Ethylene Oxide		
☐ Flanges	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Fluid Catalytic Cracking Unit	☐ Rule 218 (05/14/99) ☐ Rule 1105 (09/01/84) ☐ Rule 1105.1 (11/07/03)	☐ AQMD TM 100.1 ☐ Rule 1105(c)(1) ☐ Rule 1105.1(f)	☐ Rule 218(e) & (f) ☐ Rule 1105(c)(2) ☐ Rule 1105.1(e)
☐ Foundries, Iron and Steel	☐ 40 CFR63 SUBPART EEEEE	See Applicable Subpart	See Applicable Subpart
☐ Friction Materials Manufacturing	See Manufacturing, Friction Materials		
☐ Fugitive Emissions, Benzene	☐ Rule 1173 (12/06/02) ☐ 40 CFR61 SUBPART L ☐ 40 CFR61 SUBPART V ☐ 40 CFR63 SUBPART R ☐ 40 CFR63 SUBPART CC	☐ Rule 1173(j) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1173(i) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Fugitive Emissions, Chemical Plant	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR60 SUBPART VV	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Fugitive Emissions, Natural Gas Processing Plant	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR60 SUBPART KKK	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Fugitive Emissions, Oil & Gas Production Facility	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Fugitive Emissions, Pipeline Transfer Station	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Basic Oxygen Process	☐ 40 CFR60 SUBPART Na	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Electric Arc, For Steel Plants: Constructed After August 17, 1983	☐ 40 CFR60 SUBPART AAa	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Electric Arc, For Steel Plants: Constructed After Oct. 21, 1974, & On Or Before Aug. 17, 1983	☐ 40 CFR60 SUBPART AA	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Glass Melting	☐ Rule 1117 (01/06/84)	☐ Rule 1117(c), AQMD TM 7.1 or 100.1	
	☐ 40 CFR60 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Furnace, Lead Melting, Automotive Batteries	☐ Rule 1101 (10/07/77)	☐ AQMD TM 6.1	See Applicable Subpart
	☐ 40 CFR63 SUBPART X	See Applicable Subpart	

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Gasoline Transfer & Dispensing Operation	☐ Rule 461 (06/03/05)	☐ Rule 461(f)	☐ Rule 461(e)(6) & (e)(7)
☐ Glass Manufacturing	See Manufacturing, Glass		
☐ Grain Elevators	☐ 40 CFR60 SUBPART DD	See Applicable Subpart	See Applicable Subpart
☐ Halon-containing Equipment, Use for Technician Training, Testing, Maintenance, Service, Repair, or Disposal	☐ 40 CFR82 SUBPART H	See Applicable Subpart	See Applicable Subpart
☐ Hazardous Waste Combustors	☐ 40 CFR63 SUBPART EEE	See Applicable Subpart	See Applicable Subpart
☐ Heater, Asphalt Pavement	☐ Rule 1120 (08/04/78)	☐ AQMD Visible Emissions, AQMD TM 6.2	☐ Rule 1120(f)
☐ Heaters, Petroleum Refinery Process	☐ Rule 429 (12/21/90) ☐ Rule 431.1 (06/12/98) ☐ Rule 1146 (09/05/08) ☐ 40 CFR60 SUBPART J ☐ 40 CFR63 SUBPART DDDDD	N/A ☐ Rule 431.1(f) ☐ Rule 1146(d) See Applicable Subpart See Applicable Subpart	☐ Rule 429(d) ☐ Rule 431.1(d) & (e) ☐ Rule 1146(c)(6) & (c)(7) See Applicable Subpart See Applicable Subpart
☐ Heaters, Process	See Boilers		
☐ Incinerators	☐ 40 CFR60 SUBPART E ☐ 40 CFR60 SUBPART CCCC	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Inorganic Arsenic Emissions, Arsenic Trioxide & Metallic Arsenic Production Facilities	☐ 40 CFR61 SUBPART P	See Applicable Subpart	See Applicable Subpart
☐ Internal Combustion Engines, Reciprocating	☐ Rule 1110.2 (07/09/10) ☐ 40 CFR60 SUBPART IIII and JJJJ ☐ 40 CFR63 SUBPART ZZZZ	Rule 1110.2(g) See Applicable Subpart See Applicable Subpart	Rule 1110.2(f) See Applicable Subpart See Applicable Subpart
☐ Kiln, Cement Plant	☐ Rule 1112 (06/06/86) ☐ Rule 1112.1 (12/04/09) ☐ 40 CFR60 SUBPART F	N/A N/A See Applicable Subpart	N/A N/A See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Landfills	☐ Rule 1150 (10/15/82) ☐ Rule 1150.1 (03/17/00) ☐ 40 CFR60 SUBPART WWW ☐ 40 CFR63 SUBPART AAAA	☐ Rule 1150.1(j) See Applicable Subpart See Applicable Subpart	☐ Rule 1150.1(e) & (f) See Applicable Subpart See Applicable Subpart
☐ Lead Acid Battery Manufacturing Plants	See Manufacturing, Lead Acid Battery		
☐ Lead Electroplating Operation	☐ Rule 1426 (05/02/03)		☐ Rule 1426(e)
☐ Manufacturing, Asphalt Processing & Asphalt Roofing	☐ Rule 470 (05/07/76) ☐ Rule 1108 (02/01/85) ☐ Rule 1108.1 (11/04/83) ☐ 40 CFR60 SUBPART UU ☐ 40 CFR63 SUBPART LLLLL	N/A ☐ Rule 1108(b) ☐ Rule 1108.1 (b) See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Brick & Structural Clay Products	☐ 40 CFR63 SUBPART JJJJJ	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Cement	☐ Rule 1156 (03/06/09)	☐ Rule 1156(g)	☐ Rule 1156(f)
☐ Manufacturing, Clay Ceramics	☐ 40 CFR63 SUBPART KKKKK	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Coatings & Ink (SIC Code 2851)	☐ Rule 1141.1 (11/17/00) ☐ 40 CFR63 SUBPART HHHHH	N/A See Applicable Subpart	☐ Rule 1141.1(c) See Applicable Subpart
☐ Manufacturing, Consumer Product	☐ Title 17 CCR 94500		
☐ Manufacturing, Food Product	☐ Rule 1131 (06/06/03)	☐ Rule 1131(e)	☐ Rule 1131(d)
☐ Manufacturing, Friction Materials	☐ 40 CFR63 SUBPART QQQQQ	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Glass	☐ Rule 1117 (01/06/84) ☐ 40 CFR60 SUBPART CC ☐ 40 CFR61 SUBPART N	☐ Rule 1117(c), AQMD TM 7.1 or 100.1 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Manufacturing, Hydrochloric Acid	☐ 40 CFR63 SUBPART NNNNN	See Applicable Subpart	See Applicable Subpart
☐ Manufacturing, Lead-Acid Battery	☐ 40 CFR60 SUBPART KK	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
Manufacturing, Lime	40 CFR63 SUBPART AAAAA	See Applicable Subpart	See Applicable Subpart
Manufacturing, Magnetic Tape Industry	40 CFR60 SUBPART SSS 40 CFR63 SUBPART EE	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Manufacturing, Miscellaneous Organic Chemical	40 CFR63 SUBPART FFFF	See Applicable Subpart	See Applicable Subpart
Manufacturing, Nitric Acid	Rule 218 (05/14/99) Rule 1159 (12/06/85) 40 CFR60 SUBPART G	AQMD TM 100.1 AQMD TM 7.1 or 100.1 See Applicable Subpart	Rule 218(e) & (f) See Applicable Subpart
Manufacturing, Plywood & Composite Wood Products	Rule 1137 (02/01/02) 40 CFR63 SUBPART DDDD	N/A See Applicable Subpart	Rule 1137(e) See Applicable Subpart
Manufacturing, Polymer Industry	40 CFR60 SUBPART DDD 40 CFR63 SUBPART W 40 CFR63 SUBPART J	See Applicable Subpart See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart See Applicable Subpart
Manufacturing, Polymeric Cellular Foam	Rule 1175 (09/07/07) 40 CFR63 SUBPART UUUU	Rule 1175(f) See Applicable Subpart	Rule 1175(e) See Applicable Subpart
Manufacturing, Products Containing Halon Blends	40 CFR82 SUBPART H	See Applicable Subpart	See Applicable Subpart
Manufacturing, Products Containing Organic Solvents	Rule 443.1 (12/05/86)	N/A	N/A
Manufacturing, Products Containing Ozone Depleting Substances (ODS)	40 CFR82 SUBPART A 40 CFR82 SUBPART E	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Manufacturing, Reinforced Plastic Composites	40 CFR63 SUBPART WWWW	See Applicable Subpart	See Applicable Subpart
Manufacturing, Refractory Products	40 CFR63 SUBPART SSSSS	See Applicable Subpart	See Applicable Subpart
Manufacturing, Resin	Rule 1141 (11/17/00) 40 CFR63 SUBPART W	Rule 1141(d) See Applicable Subpart	Rule 1141(c) See Applicable Subpart
Manufacturing, Rubber Tire	40 CFR63 SUBPART XXXX	See Applicable Subpart	See Applicable Subpart
Manufacturing, Semiconductors	Rule 109 (05/02/03) Rule 1164 (01/13/95) Rule 1171 (05/01/09) 40 CFR63 SUBPART BBBBB	Rule 109(g) Rule 1164(e) Rule 1171(e) See Applicable Subpart	Rule 109(c) Rule 1164(c)(5) Rule 1171(c)(6) See Applicable Subpart
Manufacturing, Solvent	Rule 443 (05/07/76)	N/A	N/A

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
Manufacturing, Sulfuric Acid	Rule 469 (02/13/81) 40 CFR60 SUBPART H 40 CFR60 SUBPART Cd	AQMD TM 6.1 or 6.2 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Manufacturing, Surfactant	Rule 1141.2 (01/11/02)	Rule 1141.2(e) AQMD TM 25.1	
Manufacturing, Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes	40 CFR60 SUBPART III 40 CFR60 SUBPART NNN	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Manufacturing, Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes	40 CFR60 SUBPART RRR	See Applicable Subpart	See Applicable Subpart
Manufacturing, Vinyl Chloride	40 CFR61 SUBPART F	See Applicable Subpart	See Applicable Subpart
Manufacturing, Water Heaters	Rule 1121 (09/03/04)	N/A	N/A
Manufacturing, Wool Fiberglass Insulation	40 CFR60 SUBPART PPP	See Applicable Subpart	See Applicable Subpart
Manure Processing Operations	Rule 1127 (08/06/04)	Rule 1127(h)	Rule 1127(g)
Marine Tank Vessel Operations	Rule 1142 (07/19/91) Rule 1173 (02/06/09) 40 CFR63 SUBPART Y	Rule 1142(e) Rule 1173(j) See Applicable Subpart	Rule 1142(h) Rule 1173(i) See Applicable Subpart
Mercury Emissions	40 CFR61 SUBPART E 40 CFR63 SUBPART IIII	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Motor Vehicle Air Conditioners with Ozone Depleting Substances (ODS): Repair, Service, Manufacturing, Maintenance, or Disposal	40 CFR82 SUBPART B 40 CFR82 SUBPART F	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
Municipal Waste Combustors	40 CFR60 SUBPART Cb 40 CFR60 SUBPART Ea 40 CFR60 SUBPART Eb	See Applicable Subpart See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart See Applicable Subpart
Negative Air Machines/HEPA, Asbestos	40 CFR61 SUBPART M	See Applicable Subpart	See Applicable Subpart
Nickel Electroplating Operation	Rule 1426 (05/02/03)		Rule 1426(e)
Nonmetallic Mineral Processing Plants	Rule 404 (02/07/86) Rule 405 (02/07/86) 40 CFR60 SUBPART OOO	AQMD TM 5.1, 5.2, or 5.3 AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart	See Applicable Subpart
Off-site Waste and Recovery Operation	40 CFR63 SUBPART DD	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Oil and Gas Well Operation	☐ Rule 1148 (11/05/82) ☐ Rule 1148.1 (03/05/04)	☐ AQMD TM 25.1 ☐ Rule 1148.1 (g)	☐ Rule 1148.1 (f)
☐ Onshore Natural Gas Processing, SO2 Emissions	☐ 40 CFR60 SUBPART LLL	See Applicable Subpart	See Applicable Subpart
☐ Open Fires	☐ Rule 444 (11/07/08)		
☐ Open Storage, Petroleum Coke	☐ Rule 403 (06/03/05) ☐ Rule 403.1 (04/02/04) ☐ Rule 1158 (06/11/99)	☐ Rule 403(d)(4) ☐ Rule 1158(h)	☐ Rule 403(f) ☐ Rule 403.1(h) ☐ Rule 1158(j)
☐ Open Storage	☐ Rule 403 (06/03/05) ☐ Rule 403.1 (04/02/04)	☐ Rule 403(d)(4)	☐ Rule 403(f) ☐ Rule 403.1(h)
☐ Outer Continental Shelf Platform	☐ Rule 1183 (03/12/93) ☐ 40 CFR55	☐ 40 CFR55 See Applicable Subpart	☐ 40 CFR55 See Applicable Subpart
☐ Oven, Commercial Bakery	☐ Rule 1153 (01/13/95)	☐ Rule 1153(h)	☐ Rule 1153(g)
☐ Oven, Petroleum Coke	☐ Rule 477 (04/03/81) ☐ 40 CFR63 SUBPART L ☐ 40 CFR63 SUBPART CCCCC	☐ AQMD Visible Emissions, AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Ozone Depleting Substances (ODS) or Alternative ODS, Use	☐ 40 CFR82 Subpart G	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Petroleum Refineries	☐ Rule 218 (05/14/99)	☐ AQMD TM 100.1	☐ Rule 218(e) & (f)
	☐ Rule 465 (08/13/99)		
	☐ Rule 468 (10/08/76)	☐ AQMD TM 6.1 or 6.2	
	☐ Rule 469 (02/13/81)	☐ AQMD TM 6.1 or 6.2	
	☐ Rule 1118 (11/04/05)	☐ Rule 1118(j)	☐ Rule 1118(f), (g), (h), & (i)
	☐ Rule 1123 (12/07/90)	N/A	☐ Rule 1123(c)
	☐ Rule 1189 (01/21/00)	☐ Rule 1189(f)	☐ Rule 1189(e)
	☐ 40 CFR60 SUBPART J	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART EEEE	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART GGGGG	See Applicable Subpart	See Applicable Subpart
	☐ Title 13 CCR 2250		
☐ Petroleum Refineries, Fugitive Emissions	☐ Rule 1173 (02/06/09)	☐ Rule 1173(j)	☐ Rule 1173(i)
	☐ Rule 466 (10/07/83)	☐ Rule 466(f)	☐ Rule 466(e)
	☐ Rule 466.1 (03/16/84)	☐ Rule 466.1(g)	☐ Rule 466.1(h)
	☐ Rule 467 (03/05/82)	☐ Rule 467(f)	☐ Rule 467(e)
	☐ 40 CFR60 SUBPART GGG	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR61 SUBPART V	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Petroleum Refineries, Storage Tanks	☐ Rule 463 (05/06/05)	☐ Rule 463(g)	☐ Rule 463(e)(5)
	☐ Rule 1178 (04/07/06)	☐ Rule 1178(i)	☐ Rule 1178(f) & (h)
	☐ 40 CFR60 SUBPART K	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Ka	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR60 SUBPART Kb	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART F	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART G	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART H	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART I	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART R	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART EEEE	See Applicable Subpart	See Applicable Subpart
☐ Petroleum Refineries, Wastewater Systems	☐ Rule 1176 (09/13/96)	☐ Rule 1176(h)	☐ Rule 1176(f) & (g)
	☐ Rule 464 (12/07/90)	N/A	
	☐ 40 CFR60 SUBPART QQQ	See Applicable Subpart	See Applicable Subpart
	☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart
☐ Pharmaceuticals & Cosmetics Manufacturing	☐ Rule 1103 (03/12/99)	☐ Rule 1103(f)	☐ Rule 1103(e)
	☐ 40 CFR63 SUBPART GGG	See Applicable Subpart	See Applicable Subpart
☐ Polyester Resin Operation	☐ Rule 109 (05/02/03)	☐ Rule 109(g)	☐ Rule 109(c)
	☐ Rule 1162 (07/08/05)	☐ Rule 1162(f)	☐ Rule 1162(e)
	☐ Rule 1171 (05/01/09)	☐ Rule 1171(e)	☐ Rule 1171(c)(6)
☐ Primary Magnesium Refining	☐ 40 CFR63 SUBPART TTTTT	See Applicable Subpart	See Applicable Subpart
☐ Printing Press	See Coating Operations		
☐ Publicly Owned Treatment Works Operations	☐ Rule 1179 (03/06/92)	☐ Rule 1179(e)	☐ Rule 1179(c) & (d)
	☐ 40 CFR60 SUBPART O	See Applicable Subpart	See Applicable Subpart
☐ Pumps	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Recycling & Recovery Equipment for Ozone Depleting Substances (ODS),	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Refrigerant Reclaimers for Ozone Depleting Substances (ODS)	☐ 40 CFR82 SUBPART F	See Applicable Subpart	See Applicable Subpart
☐ Rendering Plant	☐ Rule 472 (05/07/76)	N/A	☐ Rule 472(b)
☐ Rock Crushing	See Nonmetallic Mineral Processing Plants		
☐ Secondary Aluminum Production	☐ 40 CFR63 SUBPART LL	See Applicable Subpart	See Applicable Subpart
☐ Semiconductor Manufacturing	See Manufacturing, Semiconductors		
☐ Sewage Treatment Plants	See Publicly Owned Treatment Works Operation		
☐ Site Remediation	☐ 40 CFR63 SUBPART GGGGG	See Applicable Subpart	See Applicable Subpart
☐ Smelting, Primary Copper	☐ 40 CFR63 SUBPART QQQ	See Applicable Subpart	See Applicable Subpart
☐ Smelting, Secondary Lead	☐ 40 CFR60 SUBPART L ☐ 40 CFR63 SUBPART X	See Applicable Subpart See Applicable Subpart	See Applicable Subpart See Applicable Subpart
☐ Soil Decontamination / Excavation	☐ Rule 1166 (05/11/01) ☐ 40 CFR63 SUBPART GGGGG	☐ Rule 1166(e) See Applicable Subpart	☐ Rule 1166(c)(1)(C) See Applicable Subpart
☐ Spray Booth	See Coating Operations		
☐ Sterilizer, Ethylene Oxide	☐ 40 CFR63 SUBPART O	See Applicable Subpart	See Applicable Subpart
☐ Storage Tank, Degassing Operation	☐ Rule 1149 (07/14/95) ☐ 40 CFR63 SUBPART CC	See Applicable Subpart	See Applicable Subpart

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Storage Tank, Greater Than 19,815 Gallon Capacity	☐ Rule 463 (05/06/05) ☐ Rule 1178 (04/07/06) ☐ 40 CFR63 SUBPART F ☐ 40 CFR63 SUBPART G ☐ 40 CFR63 SUBPART H ☐ 40 CFR63 SUBPART I ☐ 40 CFR60 SUBPART K ☐ 40 CFR60 SUBPART Ka ☐ 40 CFR60 SUBPART Kb ☐ 40 CFR63 SUBPART R ☐ 40CFR63 SUBPART BBBBBB ☐ 40 CFR63 SUBPART CC	☐ Rule 463(g) ☐ Rule 1178(i) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 463(e)(5) ☐ Rule 1178(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Synthetic Fiber Production Facilities	☐ 40 CFR60 SUBPART HHH	See Applicable Subpart	See Applicable Subpart
☐ Taconite Iron Ore Processing Facilities	☐ 40 CFR63 SUBPART RRRRR	See Applicable Subpart	See Applicable Subpart
☑ Turbine, Stationary Gas-Fired	☐ Rule 1134 (08/08/97) ☑ Rule 475 (08/07/78) ☑ 40 CFR60 SUBPART GG ☐ 40 CFR60 SUBPART KKKK ☐ 40 CFR63 SUBPART YYYY	☐ Rule 1134(e) & (g) ☐ AQMD TM 5.1, 5.2, or 5.3 See Applicable Subpart See Applicable Subpart See Applicable Subpart	☐ Rule 1134(d) & (f) See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Turbine, Stationary Oil-Fired	☐ 40 CFR63 SUBPART YYYY	See Applicable Subpart	See Applicable Subpart
☐ Valves	See Fugitive Emissions or Petroleum Refineries, Fugitive Emissions		
☐ Vessel, Refinery Process	☐ Rule 1123 (12/07/90)	N/A	☐ Rule 1123(c)
☐ Vessels	See Petroleum Refineries, Fugitive Emissions		

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Section II - Applicable Requirements, Test Methods, & MRR Requirements

Equipment/Process	Applicable Requirement	Test Method	MRR Requirement
☐ Wastewater, Chemical Plant	☐ Rule 464 (12/07/90) ☐ Rule 1176 (09/13/96) ☐ 40 CFR63 SUBPART F ☐ 40 CFR63 SUBPART G ☐ 40 CFR63 SUBPART H ☐ 40 CFR63 SUBPART I ☐ 40 CFR63 SUBPART CC	N/A ☐ Rule 1176(h) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart	 ☐ Rule 1176(f) & (g) See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart See Applicable Subpart
☐ Wastewater Treatment, Other	☐ Rule 464 (12/07/90) ☐ Rule 1176 (09/13/96)	N/A ☐ Rule 1176(h)	 ☐ Rule 1176(f) & (g)
☐ Woodworking Operations	☐ Rule 1137 (02/01/02)	N/A	☐ Rule 1137(e)

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Section III - Supplemental Identification of Specific Requirements

Complete this section only if there is a specific requirement (i.e., rule reference, test method, or MRR requirement) that is:

1. Listed for a specific type of equipment or process in Section II of this form & **DOES NOT** pertain to a specific device at your facility*; OR,
2. Is **NOT** Listed for a specific type of equipment or process in Section II of this form but it **IS** applicable to a specific device at your facility.

NOTES:

1. For any specific requirement, test method, or MRR requirement that is identified as "Remove," attach additional sheets to explain the reasons why the specific requirement does not pertain to the device listed.
2. All boxes that are checked in Section II and any additional requirements identified in this section as "Add" will be used to determine the facility's compliance status. This information will be used to verify the certification statements made on Form 500-A2.
3. Do not use this section to identify equipment that is exempt from specific rule requirements. Your equipment is automatically considered to be in compliance with the rule that specifically exempts the equipment from those requirements.
4. Listing any requirement that does not apply to a specific piece of equipment in this section will not provide the facility with a permit shield unless one is specifically requested by completing Form 500-D and approved by the AQMD.

* If this section is completed as part of the initial Title V application & there is no device number assigned, refer to the existing permit or application number in this column.

Device No.*	Specific Requirement (Rule Number & Date)	Add (A) or Remove (R) (Check one)	Test Method	Add (A) or Remove (R) (Check one)	MRR Requirement	Add (A) or Remove (R) (Check one)
		O A O R		O A O R		O A O R
		O A O R		O A O R		O A O R
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		O A O R		O A O R		O A O R

Section IV - SIP-Approved Rules That Are Not The Most Current AQMD Rules

Check off each SIP-Approved Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.

SIP - Approved Rule	Adoption/ Amendment Date	Check (✓) If Applies	SIP - Approved Rule	Adoption/ Amendment Date	Check (✓) If Applies
401	03/02/84	☑			☐
431.2	05/04/90	☐			☐
461	6/3/05	☐			☐
466.1	05/02/80	☐			☐
469	04/07/76	☐			☐
475	10/08/76	☑			☐
1112	01/06/84	☐			☐
1112.1	2/7/86	☐			☐
1113	11/08/96	☑			☐
1117	1/6/83	☐			☐
1122	07/11/97	☐			☐
1132	03/05/04	☐			☐
1140	02/01/80	☐			☐
1146	11/17/00	☐			☐
1146.1	5/13/94	☐			☐
1151	12/11/98	☐			☐
1158	6/11/99	☐			☐
1162	11/17/00	☐			☐
1166	07/14/95	☐			☐
1171	11/07/03	☑			☐
1175	05/13/94	☐			☐
1186	09/10/99	☐			☐

Section V - AQMD Rules That Are Not SIP-Approved (Continued on Following Page)					
Check off each AQMD Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
Non SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**Non SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
53 Los Angeles Co.	N/A	☑	1192	06/16/00	☐
53 Orange Co.	N/A	☐	1193	07/09/10	☐
53 Riverside Co.	N/A	☐	1194	10/20/00	☐
53 San Bernardino Co.	N/A	☐	1195	05/05/06	☐
53A San Bernardino Co.	N/A	☐	1196	06/06/08	☐
402	05/07/76	☑	1401	09/10/10	☐
429	12/21/90	☐	1401.1	11/04/05	☐
430	07/12/96	☑	1402	03/04/05	☐
441	05/07/76	☐	1403	10/05/07	☐
473	05/07/76	☐	1404	04/06/90	☐
477	04/03/81	☐	1405	01/04/91	☐
480	10/07/77	☐	1406	07/08/94	☐
1109	08/05/88	☐	1407	07/08/94	☐
1110.2	07/09/10	☐	1411	03/01/91	☐
1116.1	10/20/78	☐	1414	05/03/91	☐
1127	08/06/04	☐	1415	10/14/94	☐
1143	07/09/10	☐	1418	09/10/99	☐
1147	12/05/08	☐	1420	09/11/92	☐
1148.1	03/05/04	☐	1420.1	11/05/10	☐
1150	10/15/82	☐	1421	12/06/02	☐
1155	12/04/09	☐	1425	03/16/01	☐
1156	03/06/09	☐	1426	05/02/03	☐
1157	09/08/06	☐			☐
1163	06/07/85	☐			☐
1170	05/06/88	☐			☐
1183	03/12/93	☐			☐
1186.1	01/09/09	☐			☐
1191	06/16/00	☐			☐

Section V - AQMD Rules That Are Not SIP-Approved (Continued on Following Page)					
Check off each AQMD Rule as it applies to the facility. Use the blanks at the end of this form to fill-in new items.					
Non SIP - Approved Rule	**Adoption/ Amendment Date**	**Check (✓) If Applies**	**Non SIP - Approved Rule**	**Adoption/ Amendment Date**	**Check (✓) If Applies**
1469	12/05/08	☐	2009.1	05/11/01	☐
1469.1	03/04/05	☐	2501	05/09/97	☐
1470	06/01/07	☐	2506	12/10/99	☐
1472	03/07/08	☐			☐
2009	01/07/05	☑			☐
		☐			☐
		☐			☐
		☐			☐
		☐			☐
		☐			☐

South Coast Air Quality Management District
Form 500-F1 (Title V)
Title IV - Acid Rain Phase II Facility Information Summary

South Coast AQMD

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

This form shall be completed by Acid Rain facilities ONLY and shall accompany all requests for Phase II permit actions unique to Acid Rain facilities. Also attach a completed Form 500-A2. In addition, if an initial Title V permit, permit renewal, or permit revision is requested, attach Form 500-A1 and any supplemental Acid Rain forms (Forms 500-F2, 500-F3, and 500-F4), as appropriate.

Section I - General Information

1. Facility Name (Business Name of Operator That Appears On Permit): Burbank City, Burbank Water & Power, SCPPA

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

3. ORIS Code (5-Digit): 56046

4. This is an application for a (Check all that apply to the facility):

a. ☑ Phase II Acid Rain Permit or Revision (Complete Section II of this form)

b. ☐ Repowering Extension Plan or Revision (Complete Form 500-F2)

c. ☐ New Unit Exemption or Revision (Complete Form 500-F3)

d. ☐ Retired Unit Exemption or Revision (Complete Form 500-F4)

5. The requested permit action involves a(n) (Check one):

a. ○ Administrative Permit Revision

b. ○ Significant Permit Revision

c. ○ Fast Track Permit Revision

d. ○ Automatic Permit Revision

e. ⦿ Other (specify): Title V Significant Permit Revision

6. For all applications requesting a permit revision, provide a general description of the proposed changes (Attach additional sheets as necessary):

The permit revision is for the upgrade of the existing Magnolia Power Project (MPP). This will result in increased operational capacity/output and also in improved energy efficiency.

Section II - Phase II Acid Rain Device Summary

1. The following information is (Check one): a. ○ New b. ⦿ Revised

AQMD Device #	EPA Unit #	Will device need a Repowering Extension Plan?	Has device started operations on or after 11/15/90?	Device Operations Start Date (mo/day/yr)	For devices starting-up after 11/15/90, provide date when Monitoring Certification will begin (mo/day/yr)
D4/D6	1	○ Yes ⦿ No	⦿ Yes ○ No	06/04/2005	09/21/2005
		○ Yes ○ No	○ Yes ○ No		
		○ Yes ○ No	○ Yes ○ No		
		○ Yes ○ No	○ Yes ○ No		
		○ Yes ○ No	○ Yes ○ No		

South Coast Air Quality Management District

Form 500-H
Title V - Compliance Assurance Monitoring (CAM) Applicability Determination for Initial, Renewal, & Significant Permit Revision

This form is required as part of an initial, significant permit revision, or renewal Title V application. If your Title V facility has control devices in use, the CAM rule may apply. Follow the instructions on the reverse side of this form to determine whether your facility is subject to CAM requirements.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section I - Operator Information

1. Facility Name (Business Name of Operator That Appears On Permit): Burbank City, Burbank Water & Power, SCPPA

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 128243

Section II - CAM Status Summary for Emission Units

3. Based on the criteria in the instructions (check one and attach additional pages as necessary):

a. ☐ The emission units identified below are subject to the CAM rule[1] and a CAM plan[2] is attached for each affected emissions unit:

b. ☑ There are no emission units with control devices at this Title V facility that are subject to the CAM rule.

Emission Unit[3] (Application, Permit or Device No.)	Equipment Description[4]	Uncontrolled Emissions		Connected to Control Unit[3] (Application, Permit or Device No.)	Equipment Description[4]	Controlled Emissions	
		Pollutant	PTE[5] (tons/year)			Pollutant	PTE[5] (tons/year)

1 For more detailed information regarding the CAM rule applicability, refer to Title 40, Chapter I, Part 64, Section 64.1 of the Code of Federal Regulations (40 CFR Part 64, Section 64.1). This also can be accessed via the internet at: http://www.access.gpo.gov/nara/cfr/waisidx_99/40cfr64_99.html.

2 Only one CAM plan is required for a control device that is common to more than one emissions unit, or if an emissions unit is controlled by more than one control device similar in design and operation. If the control devices are not similar in design and operation, one plan is required for each control device.

3 List all new and existing emission units and the connected control devices either by AQMD application, permit or device number. When the emission unit is new and has not yet been assigned an application number, leave this column blank.

4 Provide a brief equipment description of the emission units and control devices by indicating equipment type, make, and model and serial numbers as appropriate.

5 Potential to Emit

APPENDIX C
AIR DISPERSION MODELING OUTPUT FILES, AIR DISPERSION MODELING AND HEALTH RISK ASSESSMENT PROTOCOL AND EXISTING FACILITY PERMIT

C.1 Air Dispersion Modeling Output Files

C.2 Air Dispersion Modeling and Health Risk Assessment Protocol

C.3 Existing MPP Facility Partial Permit (Issued in 2022)

APPENDIX C.1
Air Dispersion Modeling Output Files

AIR DISPERSION MODELING OUTPUTS

Maximum CO Concentration (1-hr and 8-hr)

(1)

```
** Lakes Environmental AERMOD MPI
**
*****************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 12.0.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 11/24/2024
** FILE: C:\BURBANK\MPP_27\MPP_27.ADI
**
*****************************************
**
**
*****************************************
** AERMOD CONTROL PATHWAY
*****************************************
**
**
CO STARTING
   TITLEONE MPP 24 COMMISSIONING TASK 5C, CO 1-HR AND 8-HR
   TITLETWO BURBANK METEOROLOGICAL DATA (2018-2022)
   MODELOPT DFAULT CONC
   AVERTIME 1 8
   URBANOPT 9663345 LOS_ANGELES_COUNTY
   POLLUTID CO
   RUNORNOT RUN
CO FINISHED
**
*****************************************
** AERMOD SOURCE PATHWAY
*****************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
   LOCATION GE_CM      POINT    378903.730  3782597.160     170.688
** DESCRSRC GE_CM
** SOURCE PARAMETERS **
   SRCPARAM GE_CM        126.88   45.700  367.590    10.56      5.8

** BUILDING DOWNWASH **
   BUILDHGT GE_CM       25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM       25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM       25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM       25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM       25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM       25.30   25.30   25.30   25.30   25.30   25.30

   BUILDWID GE_CM       23.06   48.94   42.62   54.01   52.65   69.24
```

CO → Commissicng

5C (1-hr and 8-hr)

MPP_27

```
  DISCCART   381100.00  3785700.00  543.56  951.68
  DISCCART   381200.00  3785700.00  569.74  951.68
  DISCCART   381300.00  3785700.00  531.11  951.68
  DISCCART   381400.00  3785700.00  573.44  951.68
  DISCCART   381500.00  3785700.00  601.54  951.68
  DISCCART   381600.00  3785700.00  561.55  951.68
  DISCCART   381700.00  3785700.00  585.99  951.68
  DISCCART   381800.00  3785700.00  544.13  951.68
  DISCCART   381900.00  3785700.00  617.86  951.68
  DISCCART   382000.00  3785700.00  615.76  951.68
  DISCCART   382100.00  3785700.00  582.09  951.68
  DISCCART   382200.00  3785700.00  589.74  951.68
RE FINISHED
**
******************************************
** AERMOD METEOROLOGY PATHWAY
******************************************
**
**
ME STARTING
  SURFFILE MET\2019-2023\KBUR_V11_TRIMMED.SFC
  PROFFILE MET\2019-2023\KBUR_V11_TRIMMED.PFL
  SURFDATA 23152 2019
  UAIRDATA 3190 2019
  PROFBASE 236.0 METERS
ME FINISHED
**
******************************************
** AERMOD OUTPUT PATHWAY
******************************************
**
**
OU STARTING
  RECTABLE ALLAVE 1ST
  RECTABLE 1 1ST 8TH
  RECTABLE 8 1ST
** AUTO-GENERATED PLOTFILES
  PLOTFILE  1 ALL 1ST MPP_27.AD\01H1GALL.PLT 31
  PLOTFILE  8 ALL 1ST MPP_27.AD\08H1GALL.PLT 32
  PLOTFILE  1 ALL 8TH MPP_27.AD\01H8GALL.PLT 33
OU FINISHED

 *** Message Summary For AERMOD Model Setup ***

 --------- Summary of Total Messages --------

A Total of        0 Fatal Error Message(s)
A Total of        2 Warning Message(s)
A Total of        0 Informational Message(s)
```

③

```
******** FATAL ERROR MESSAGES ********
    *** NONE ***

******** WARNING MESSAGES ********
ME W186   5675   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used       0.50
ME W187   5675   MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

************************************
*** SETUP Finishes Successfully ***
************************************
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:
* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses URBAN Dispersion Algorithm for the SBL for 1 Source(s),
for Total of 1 Urban Area(s):
Urban Population = 9663345.0 ; Urban Roughness Length = 1.000 m
* Urban Roughness Length of 1.0 Meter Used.
* ADJ_U* - Use ADJ_U* option for SBL in AERMET
* CCVR_Sub - Meteorological data includes CCVR substitutions
* TEMP_Sub - Meteorological data includes TEMP substitutions
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: CO

**Model Calculates 2 Short Term Average(s) of: 1-HR 8-HR

**This Run Includes: 1 Source(s); 1 Source Group(s); and 5570 Receptor(s)

with: 1 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 0 AREA type source(s)
and: 0 LINE source(s)
and: 0 RLINE/RLINEXT source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with a total of 0 line(s)
and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
GE_CM	0	0.12688E+03	378903.7	3782597.2	170.7	45.70	367.59	10.56	5.80	YES	YES	NO	

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 8-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE_CM ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
378685.36	3782449.25	77.30950	(21011916)	378942.85	3782219.90	93.70025	(20012916)
379134.94	3782428.55	68.24663	(23011216)	378892.34	3782671.14	30.99982	(22061516)
378722.14	3782416.49	81.16081	(21011916)	378758.93	3782383.72	47.50649	(23110816)
378795.71	3782350.96	79.19178	(21041816)	378832.50	3782318.19	115.34260	(21041816)
378869.28	3782285.43	110.13520	(21041816)	378906.07	3782252.66	77.70514	(21041816)
378974.86	3782254.67	94.61870	(20012916)	379006.88	3782289.45	77.70396	(20012916)
379038.90	3782324.23	91.44739	(21022716)	379070.91	3782359.00	74.14445	(19040916)
379102.92	3782393.77	69.76030	(19040916)	379100.28	3782463.21	68.71004	(23011216)
379065.63	3782497.86	62.97863	(23011216)	379030.97	3782532.52	58.13025	(22040616)
378996.31	3782567.17	39.94541	(22040616)	378961.65	3782601.83	16.74567	(20091216)
378927.00	3782636.48	9.99018	(20091216)	378862.77	3782639.44	19.25031	(20091216)
378833.20	3782607.74	23.83807	(20091216)	378803.63	3782576.04	31.72749	(20091216)
378774.07	3782544.35	34.81439	(22061516)	378744.50	3782512.65	37.05514	(22021216)
378714.93	3782480.95	50.57989	(21011916)	378388.82	3782005.66	152.77205	(21011924)
378906.55	3783551.72	88.59562	(21081816)	379860.95	3782507.99	71.77059	(21052116)
379767.53	3783130.29	36.89634	(20012316)	380033.09	3782272.88	40.15988	(23112216)
379051.51	3781209.65	58.28286	(20020316)	379355.97	3781227.92	55.88454	(21022016)
379629.17	3783841.88	29.52244	(20032516)	377757.31	3781647.85	69.38309	(21011924)
378662.65	3781081.57	46.11576	(21041816)	378982.27	3783706.02	69.58286	(23091416)
377902.34	3782167.25	47.93014	(20120724)	380044.85	3783193.29	27.85109	(19110916)
379060.59	3781198.44	57.34703	(20020316)	377538.05	3783214.56	41.08726	(23022516)
380346.88	3782302.15	32.45612	(23112216)	380409.98	3782190.44	30.53836	(19041024)
377404.25	3782850.29	17.49131	(23022516)	379440.28	3782768.48	93.69723	(22121116)
379483.12	3783233.75	56.23659	(20060916)	379975.09	3782783.81	63.47002	(21052116)
378929.19	3783163.24	150.92816	(20080416)	378901.97	3783196.86	144.46798	(20080416)
378932.34	3783407.20	101.54850	(23091416)	373750.00	3777250.00	7.09342	(22111924)
374000.00	3777250.00	8.49478	(19123024)	374250.00	3777250.00	9.75038	(19123024)
374500.00	3777250.00	10.60266	(19123024)	374750.00	3777250.00	11.50305	(19123024)
375000.00	3777250.00	12.10162	(19123024)	375250.00	3777250.00	12.22307	(19123024)
375500.00	3777250.00	13.27796	(22012124)	375750.00	3777250.00	15.51637	(22012124)
376000.00	3777250.00	16.97945	(22012124)	376250.00	3777250.00	16.99732	(22012124)
376500.00	3777250.00	15.73664	(23110824)	376750.00	3777250.00	15.23133	(23110824)
377000.00	3777250.00	13.65052	(23110824)	377250.00	3777250.00	12.63082	(21120408)
377500.00	3777250.00	13.81998	(21120408)	377750.00	3777250.00	11.26329	(20112608)
378000.00	3777250.00	12.50323	(20112608)	378250.00	3777250.00	13.18488	(19012524)
378500.00	3777250.00	15.92315c	(19031024)	378750.00	3777250.00	16.43264c	(19031024)

(7)

379000.00	3777250.00	14.61239c (19031024)	379250.00	3777250.00	16.34126 (20060724)
379500.00	3777250.00	15.83237 (20060724)	379750.00	3777250.00	13.25857 (22011024)
380000.00	3777250.00	13.54533 (19101208)	380250.00	3777250.00	14.33569 (19122124)
380500.00	3777250.00	16.32445 (19121508)	380750.00	3777250.00	18.32719 (19010124)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 8-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE_CM ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
381000.00	3777250.00	18.20389	(19010124)	381250.00	3777250.00	18.01488	(23040408)
381500.00	3777250.00	17.32908	(23040408)	381750.00	3777250.00	15.06917	(23040408)
382000.00	3777250.00	14.49499	(22121724)	382250.00	3777250.00	12.54572	(22121724)
382500.00	3777250.00	11.07076	(19012208)	382750.00	3777250.00	10.57498	(19012208)
383000.00	3777250.00	10.44462	(20110524)	383250.00	3777250.00	10.92982	(20110524)
383500.00	3777250.00	10.89781	(20110524)	383750.00	3777250.00	10.43305	(20110524)
384000.00	3777250.00	10.26647	(19113024)	384250.00	3777250.00	10.88635	(22031724)
373750.00	3777500.00	7.08643	(22111924)	374000.00	3777500.00	8.26748	(19123024)
374250.00	3777500.00	9.74556	(19123024)	374500.00	3777500.00	10.82391	(19123024)
374750.00	3777500.00	11.65629	(19123024)	375000.00	3777500.00	12.53801	(19123024)
375250.00	3777500.00	12.99852	(19123024)	375500.00	3777500.00	13.04337	(19123024)
375750.00	3777500.00	14.92991	(22012124)	376000.00	3777500.00	17.19068	(22012124)
376250.00	3777500.00	18.24221	(22012124)	376500.00	3777500.00	17.42839	(22012124)
376750.00	3777500.00	15.93760	(23110824)	377000.00	3777500.00	14.50439	(23102924)
377250.00	3777500.00	13.02381	(21120408)	377500.00	3777500.00	15.16776	(21120408)
377750.00	3777500.00	12.28346	(21010624)	378000.00	3777500.00	13.08694	(20112608)
378250.00	3777500.00	13.90766	(20112608)	378500.00	3777500.00	15.52958c	(19031024)
378750.00	3777500.00	17.11824c	(19031024)	379000.00	3777500.00	15.29388c	(19031024)
379250.00	3777500.00	14.69237	(20060724)	379500.00	3777500.00	14.17511	(20060724)
379750.00	3777500.00	13.78099	(22011024)	380000.00	3777500.00	14.76335	(19110708)
380250.00	3777500.00	15.89980	(19122124)	380500.00	3777500.00	17.37203	(19010124)
380750.00	3777500.00	18.42856	(19010124)	381000.00	3777500.00	17.85411	(23040408)
381250.00	3777500.00	18.53350	(23040408)	381500.00	3777500.00	17.24553	(23040408)
381750.00	3777500.00	13.69371	(23040408)	382000.00	3777500.00	12.27522	(22121724)
382250.00	3777500.00	11.73356	(19012208)	382500.00	3777500.00	11.38846	(19012208)
382750.00	3777500.00	10.61798	(20012724)	383000.00	3777500.00	11.15921	(20110524)
383250.00	3777500.00	11.17129	(20110524)	383500.00	3777500.00	10.76690	(20110524)
383750.00	3777500.00	10.59271	(19113024)	384000.00	3777500.00	11.25901	(22031724)
384250.00	3777500.00	12.07502	(22031724)	373750.00	3777750.00	7.22921	(20112624)
374000.00	3777750.00	8.01620	(19123024)	374250.00	3777750.00	9.11747	(19123024)
374500.00	3777750.00	10.57170	(19123024)	374750.00	3777750.00	11.71521	(19123024)
375000.00	3777750.00	12.72358	(19123024)	375250.00	3777750.00	13.42923	(19123024)
375500.00	3777750.00	13.86299	(19123024)	375750.00	3777750.00	14.05421	(22012124)
376000.00	3777750.00	16.80324	(22012124)	376250.00	3777750.00	18.95748	(22012124)
376500.00	3777750.00	19.20600	(22012124)	376750.00	3777750.00	17.64011	(23110824)
377000.00	3777750.00	14.89176	(23102924)	377250.00	3777750.00	11.87232	(19111008)

(9)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

```
                                          DATE                              NETWORK
GROUP ID                AVERAGE CONC     (YYMMDDHH)      RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL    HIGH  1ST HIGH VALUE IS    362.99150  ON 19013115: AT ( 379200.00, 3782800.00,  179.92,  951.68,   0.00) DC
       HIGH  8TH HIGH VALUE IS    262.75746  ON 21083012: AT ( 378800.00, 3782800.00,  173.71,  951.68,   0.00) DC
```

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

```
                                        DATE                              NETWORK
GROUP ID              AVERAGE CONC    (YYMMDDHH)        RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL     HIGH   1ST HIGH VALUE IS     198.62849  ON 20080416: AT (  378900.00,  3782900.00,   177.21,   951.68,    0.00)  DC
```

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 1628 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 833 Calm Hours Identified

A Total of 795 Missing Hours Identified (1.81 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

ME W186	5675	MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used	0.50
ME W187	5675	MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET	

****
*** AERMOD Finishes Successfully ***
****

Maximum PM10 Concentration (24-hr)

1

PM10 → Normal Operation
24-hour

```
** Lakes Environmental AERMOD MPI
**
*****************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 12.0.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 9/14/2024
** FILE: C:\BURBANK\MPP_04\MPP_04.ADI
**
*****************************************
**
**
*****************************************
** AERMOD CONTROL PATHWAY
*****************************************
**
**
CO STARTING
   TITLEONE MPP 24 NORMAL OPERATION, PM10  CT+DB, 24-HR
   TITLETWO BURBANK METEOROLOGICAL DATA (2018-2022)
   MODELOPT DFAULT CONC
   AVERTIME 24
   URBANOPT 9663345 LOS_ANGELES_COUNTY
   POLLUTID PM_10
   RUNORNOT RUN
CO FINISHED
**
*****************************************
** AERMOD SOURCE PATHWAY
*****************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
   LOCATION GE_CM       POINT    378903.730  3782597.160     170.688
** DESCRSRC GE_CM
** SOURCE PARAMETERS **
   SRCPARAM GE_CM        2.307   45.700  356.400    20.1      5.8

** BUILDING DOWNWASH **
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30

   BUILDWID GE_CM        23.05   56.02   55.86   54.01   61.00   69.24
```

```
  DISCCART   381100.00  3785700.00  543.56  951.68
  DISCCART   381200.00  3785700.00  569.74  951.68
  DISCCART   381300.00  3785700.00  531.11  951.68
  DISCCART   381400.00  3785700.00  573.44  951.68
  DISCCART   381500.00  3785700.00  601.54  951.68
  DISCCART   381600.00  3785700.00  561.55  951.68
  DISCCART   381700.00  3785700.00  585.99  951.68
  DISCCART   381800.00  3785700.00  544.13  951.68
  DISCCART   381900.00  3785700.00  617.86  951.68
  DISCCART   382000.00  3785700.00  615.76  951.68
  DISCCART   382100.00  3785700.00  582.09  951.68
  DISCCART   382200.00  3785700.00  589.74  951.68
RE FINISHED
**
******************************************
** AERMOD METEOROLOGY PATHWAY
******************************************
**
**
ME STARTING
   SURFFILE MET\2019-2023\KBUR_V11_TRIMMED.SFC
   PROFFILE MET\2019-2023\KBUR_V11_TRIMMED.PFL
   SURFDATA 23152 2019
   UAIRDATA 3190 2019
   PROFBASE 236.0 METERS
ME FINISHED
**
******************************************
** AERMOD OUTPUT PATHWAY
******************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 24 1ST
** AUTO-GENERATED PLOTFILES
   PLOTFILE   24 ALL 1ST MPP_04.AD\24H1GALL.PLT 31
OU FINISHED

  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of        0 Fatal Error Message(s)
 A Total of        2 Warning Message(s)
 A Total of        0 Informational Message(s)

   ******** FATAL ERROR MESSAGES ********
```

③

*** NONE ***

******** WARNING MESSAGES ********

```
ME W186   5675   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used        0.50
ME W187   5675   MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

****

*** SETUP Finishes Successfully ***

****

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:
* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses URBAN Dispersion Algorithm for the SBL for 1 Source(s),
for Total of 1 Urban Area(s):
Urban Population = 9663345.0 ; Urban Roughness Length = 1.000 m
* Urban Roughness Length of 1.0 Meter Used.
* ADJ_U* - Use ADJ_U* option for SBL in AERMET
* CCVR_Sub - Meteorological data includes CCVR substitutions
* TEMP_Sub - Meteorological data includes TEMP substitutions
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: PM_10

**Model Calculates 1 Short Term Average(s) of: 24-HR

**This Run Includes: 1 Source(s); 1 Source Group(s); and 5570 Receptor(s)

with: 1 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 0 AREA type source(s)
and: 0 LINE source(s)
and: 0 RLINE/RLINEXT source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with a total of 0 line(s)
and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

5

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
GE_CM	0	0.23070E+01	378903.7	3782597.2	170.7	45.70	356.40	20.10	5.80	YES	YES	NO	

7

*** AERMOD - VERSION 23132 *** *** MPP 24 NORMAL OPERATION, PM10 CT+DB, 24-HR *** 09/14/24
*** AERMET - VERSION 22112 *** *** BURBANK METEOROLOGICAL DATA (2018-2022) *** 12:41:43
PAGE 139
*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE_CM ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
377300.00	3785700.00	0.13864c	(23042624)	377400.00	3785700.00	0.14080c	(23042624)
377500.00	3785700.00	0.14059c	(23042624)	377600.00	3785700.00	0.13740c	(23042624)
377700.00	3785700.00	0.13716	(19062124)	377800.00	3785700.00	0.13608	(19062124)
377900.00	3785700.00	0.14025	(20090824)	378000.00	3785700.00	0.15476	(19070824)
378100.00	3785700.00	0.17252	(22061724)	378200.00	3785700.00	0.18360	(22061724)
378300.00	3785700.00	0.19975c	(23042524)	378400.00	3785700.00	0.25368	(19061924)
378500.00	3785700.00	0.25630	(19061924)	378600.00	3785700.00	0.25924	(20061624)
378700.00	3785700.00	0.27857	(20061624)	378800.00	3785700.00	0.31483	(20061624)
378900.00	3785700.00	0.30515	(20061824)	379000.00	3785700.00	0.28902	(20061824)
379100.00	3785700.00	0.26961	(20061824)	379200.00	3785700.00	0.24461	(20061824)
379300.00	3785700.00	0.23282	(21081924)	379400.00	3785700.00	0.21982	(21081924)
379500.00	3785700.00	0.19529	(21081924)	379600.00	3785700.00	0.19856	(23091624)
379700.00	3785700.00	0.20089	(23091624)	379800.00	3785700.00	0.20583	(23091624)
379900.00	3785700.00	0.20089	(23091624)	380000.00	3785700.00	0.19616	(23091624)
380100.00	3785700.00	0.18559	(23091624)	380200.00	3785700.00	0.17022	(23091624)
380300.00	3785700.00	0.15453	(23091624)	380400.00	3785700.00	0.12894	(23091624)
380500.00	3785700.00	0.10674	(23091624)	380600.00	3785700.00	0.07532	(23091624)
380700.00	3785700.00	0.08455b	(21042324)	380800.00	3785700.00	0.09205b	(21042324)
380900.00	3785700.00	0.07620b	(21042324)	381000.00	3785700.00	0.06547	(20100624)
381100.00	3785700.00	0.06821	(20100624)	381200.00	3785700.00	0.06917	(20100624)
381300.00	3785700.00	0.07074	(20100624)	381400.00	3785700.00	0.06890	(20100624)
381500.00	3785700.00	0.06596	(20100624)	381600.00	3785700.00	0.06509	(20100624)
381700.00	3785700.00	0.06122	(20100624)	381800.00	3785700.00	0.06554	(22052724)
381900.00	3785700.00	0.05761	(23122824)	382000.00	3785700.00	0.05878	(23122824)
382100.00	3785700.00	0.05963	(23122824)	382200.00	3785700.00	0.06031	(23122824)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

```
                                      DATE                        NETWORK
GROUP ID               AVERAGE CONC   (YYMMDDHH)        RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL     HIGH  1ST HIGH VALUE IS     1.39887  ON 20021024: AT (  378500.00,  3782100.00,   169.78,   951.68,    0.00)  DC
```

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

```
A Total of          0 Fatal Error Message(s)
A Total of          2 Warning Message(s)
A Total of       1628 Informational Message(s)

A Total of      43824 Hours Were Processed

A Total of        833 Calm Hours Identified

A Total of        795 Missing Hours Identified (  1.81 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186    5675      MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used          0.50
ME W187    5675      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

   ***************************************
   *** AERMOD Finishes Successfully ***
   ***************************************
```

Maximum PM10 Concentration (Annual)

PM10 - Annual
2022

```
** Lakes Environmental AERMOD MPI
**
*******************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 12.0.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 9/15/2024
** FILE: C:\BURBANK\MPP_06_4\MPP_06_4.ADI
**
*******************************************
**
**
*******************************************
** AERMOD CONTROL PATHWAY
*******************************************
**
**
CO STARTING
   TITLEONE MPP 24 NORMAL OPERATION, PM10 ANNUAL (2021)
   TITLETWO BURBANK METEOROLOGICAL DATA (2018-2022)
   MODELOPT DFAULT CONC
   AVERTIME ANNUAL
   URBANOPT 9663345 LOS_ANGELES_COUNTY
   POLLUTID PM_10
   RUNORNOT RUN
CO FINISHED
**
*******************************************
** AERMOD SOURCE PATHWAY
*******************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
   LOCATION GE_CM      POINT    378903.730 3782597.160    170.688
** DESCRSRC GE_CM
** SOURCE PARAMETERS **
   SRCPARAM GE_CM         1.726   45.700  356.400    20.1     5.8

** BUILDING DOWNWASH **
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30

   BUILDWID GE_CM        23.05   56.02   55.86   54.01   61.00   69.24
```

```
  DISCCART   381100.00  3785700.00  543.56  951.68
  DISCCART   381200.00  3785700.00  569.74  951.68
  DISCCART   381300.00  3785700.00  531.11  951.68
  DISCCART   381400.00  3785700.00  573.44  951.68
  DISCCART   381500.00  3785700.00  601.54  951.68
  DISCCART   381600.00  3785700.00  561.55  951.68
  DISCCART   381700.00  3785700.00  585.99  951.68
  DISCCART   381800.00  3785700.00  544.13  951.68
  DISCCART   381900.00  3785700.00  617.86  951.68
  DISCCART   382000.00  3785700.00  615.76  951.68
  DISCCART   382100.00  3785700.00  582.09  951.68
  DISCCART   382200.00  3785700.00  589.74  951.68
RE FINISHED
**
********************************************
** AERMOD METEOROLOGY PATHWAY
********************************************
**
**
ME STARTING
  SURFFILE MET\2019-2023\KBUR_V11_TRIMMED.SFC
  PROFFILE MET\2019-2023\KBUR_V11_TRIMMED.PFL
  SURFDATA 23152 2019
  UAIRDATA 3190 2019
  PROFBASE 236.0 METERS
  STARTEND 2022 1 1 1 2022 12 31 24
ME FINISHED
**
********************************************
** AERMOD OUTPUT PATHWAY
********************************************
**
**
OU STARTING
** MAXIMUM ANNUAL AVERAGE POST FILES FOR EACH MET YEAR
  POSTFILE   ANNUAL ALL PLOT MPP_06_4.AD\ANNUAL_G001.PLT 31
** AUTO-GENERATED PLOTFILES
  PLOTFILE   ANNUAL ALL MPP_06_4.AD\AN00GALL.PLT 32
  SUMMFILE MPP_06_4.SUM
OU FINISHED

 *** Message Summary For AERMOD Model Setup ***

 --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          2 Warning Message(s)
 A Total of          0 Informational Message(s)
```

③

```
******** FATAL ERROR MESSAGES ********
         *** NONE ***

******** WARNING MESSAGES ********
ME W186  5676  MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used      0.50
ME W187  5676  MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

*************************************
*** SETUP Finishes Successfully ***
*************************************
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

- -

** Model Options Selected:
* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Model Uses URBAN Dispersion Algorithm for the SBL for 1 Source(s),
for Total of 1 Urban Area(s):
Urban Population = 9663345.0 ; Urban Roughness Length = 1.000 m
* Urban Roughness Length of 1.0 Meter Used.
* ADJ_U* - Use ADJ_U* option for SBL in AERMET
* CCVR_Sub - Meteorological data includes CCVR substitutions
* TEMP_Sub - Meteorological data includes TEMP substitutions
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: PM_10

**Model Calculates ANNUAL Averages Only

**This Run Includes: 1 Source(s); 1 Source Group(s); and 5570 Receptor(s)

with: 1 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 0 AREA type source(s)
and: 0 LINE source(s)
and: 0 RLINE/RLINEXT source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with a total of 0 line(s)
and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 22112

**Output Options Selected:

(5)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
GE_CM	0	0.17260E+01	378903.7	3782597.2	170.7	45.70	356.40	20.10	5.80	YES	YES	NO	

7

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 1 YEARS FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE_CM ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
377300.00	3785700.00	0.03345	377400.00	3785700.00	0.03440
377500.00	3785700.00	0.03553	377600.00	3785700.00	0.03672
377700.00	3785700.00	0.03801	377800.00	3785700.00	0.03945
377900.00	3785700.00	0.04117	378000.00	3785700.00	0.04312
378100.00	3785700.00	0.04517	378200.00	3785700.00	0.04692
378300.00	3785700.00	0.04902	378400.00	3785700.00	0.05374
378500.00	3785700.00	0.05330	378600.00	3785700.00	0.05203
378700.00	3785700.00	0.05152	378800.00	3785700.00	0.05299
378900.00	3785700.00	0.05039	379000.00	3785700.00	0.04633
379100.00	3785700.00	0.04241	379200.00	3785700.00	0.03861
379300.00	3785700.00	0.03406	379400.00	3785700.00	0.03096
379500.00	3785700.00	0.02726	379600.00	3785700.00	0.02476
379700.00	3785700.00	0.02217	379800.00	3785700.00	0.01993
379900.00	3785700.00	0.01800	380000.00	3785700.00	0.01641
380100.00	3785700.00	0.01506	380200.00	3785700.00	0.01393
380300.00	3785700.00	0.01300	380400.00	3785700.00	0.01200
380500.00	3785700.00	0.01124	380600.00	3785700.00	0.01027
380700.00	3785700.00	0.01006	380800.00	3785700.00	0.00979
380900.00	3785700.00	0.00937	381000.00	3785700.00	0.00896
381100.00	3785700.00	0.00858	381200.00	3785700.00	0.00827
381300.00	3785700.00	0.00830	381400.00	3785700.00	0.00796
381500.00	3785700.00	0.00769	381600.00	3785700.00	0.00777
381700.00	3785700.00	0.00754	381800.00	3785700.00	0.00763
381900.00	3785700.00	0.00718	382000.00	3785700.00	0.00710
382100.00	3785700.00	0.00716	382200.00	3785700.00	0.00704

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	0.25527 AT	(378800.00, 3783100.00, 178.87, 951.68, 0.00) DC	
	2ND HIGHEST VALUE IS	0.24976 AT	(378800.00, 3783000.00, 177.81, 951.68, 0.00) DC	
	3RD HIGHEST VALUE IS	0.24287 AT	(378800.00, 3783200.00, 179.91, 951.68, 0.00) DC	
	4TH HIGHEST VALUE IS	0.24273 AT	(378900.00, 3783100.00, 180.99, 951.68, 0.00) DC	
	5TH HIGHEST VALUE IS	0.23768 AT	(378900.00, 3783000.00, 178.50, 951.68, 0.00) DC	
	6TH HIGHEST VALUE IS	0.23033 AT	(378900.00, 3783200.00, 184.76, 951.68, 0.00) DC	
	7TH HIGHEST VALUE IS	0.22999 AT	(378901.97, 3783196.86, 184.64, 951.68, 0.00) DC	
	8TH HIGHEST VALUE IS	0.22390 AT	(378800.00, 3783300.00, 185.38, 951.68, 0.00) DC	
	9TH HIGHEST VALUE IS	0.21971 AT	(378929.19, 3783163.24, 183.13, 951.68, 0.00) DC	
	10TH HIGHEST VALUE IS	0.21401 AT	(378800.00, 3782900.00, 175.74, 951.68, 0.00) DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

(9)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 1123 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 55 Calm Hours Identified

A Total of 121 Missing Hours Identified (1.38 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
ME W186 5676 MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used 0.50
ME W187 5676 MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

****
*** AERMOD Finishes Successfully ***
****

Maximum SO2 Concentration (1-hr NAAQS)

①

SOx → Normal Operation

1-hr → NAAQS

```
** Lakes Environmental AERMOD MPI
**
*****************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 12.0.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 9/14/2024
** FILE: C:\BURBANK\MPP_20\MPP_20.ADI
**
*****************************************
**
**
*****************************************
** AERMOD CONTROL PATHWAY
*****************************************
**
**
CO STARTING
   TITLEONE MPP 24 NORMAL OPERATION, SOX CT+DB, 1-HR NAAQS (99TH)
   TITLETWO BURBANK METEOROLOGICAL DATA (2018-2022)
   MODELOPT DFAULT CONC
   AVERTIME 1
   URBANOPT 9663345 LOS_ANGELES_COUNTY
   POLLUTID SO2
   RUNORNOT RUN
CO FINISHED
**
*****************************************
** AERMOD SOURCE PATHWAY
*****************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
   LOCATION GE_CM      POINT    378903.730  3782597.160     170.688
** DESCRSRC GE_CM
** SOURCE PARAMETERS **
   SRCPARAM GE_CM        0.242   45.700  356.400    20.1     5.8

** BUILDING DOWNWASH **
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30

   BUILDWID GE_CM        23.06   48.94   42.62   54.01   52.65   69.24
```

```
  BUILDWID GE_CM      21.21   24.70   27.44   29.34   30.36   30.45
  BUILDWID GE_CM      29.61   30.15   30.52   29.97   28.51   26.18
  BUILDWID GE_CM      23.06   48.94   42.62   54.01   52.65   69.24
  BUILDWID GE_CM      21.21   24.70   27.44   29.34   30.36   30.45
  BUILDWID GE_CM      29.61   30.15   30.52   29.97   28.51   26.18

  BUILDLEN GE_CM      29.34   57.66   54.74   62.58   73.53   80.19
  BUILDLEN GE_CM      29.97   28.51   26.18   23.06   19.23   14.82
  BUILDLEN GE_CM       9.96   12.43   17.08   21.21   24.70   27.44
  BUILDLEN GE_CM      29.34   57.66   54.74   62.58   73.53   80.19
  BUILDLEN GE_CM      29.97   28.51   26.18   23.06   19.23   14.82
  BUILDLEN GE_CM       9.96   12.43   17.08   21.21   24.70   27.44

  XBADJ   GE_CM     -30.72  -78.65  -73.89  -66.88  -83.01  -80.71
  XBADJ   GE_CM     -31.88  -29.34  -25.90  -21.68  -16.80  -11.41
  XBADJ   GE_CM      -5.67   -3.87   -2.93   -1.91   -0.83    0.28
  XBADJ   GE_CM       1.38   20.99   19.14    4.30    9.48    0.52
  XBADJ   GE_CM       1.91    0.83   -0.28   -1.38   -2.43   -3.42
  XBADJ   GE_CM      -4.30   -8.56  -14.15  -19.30  -23.87  -27.72

  YBADJ   GE_CM      10.15  -14.75  -23.15  -21.34  -30.80  -31.69
  YBADJ   GE_CM      -8.70  -11.52  -14.00  -16.05  -17.61  -18.64
  YBADJ   GE_CM     -19.10  -18.94  -18.19  -16.89  -15.08  -12.81
  YBADJ   GE_CM     -10.15   14.75   23.15   21.34   30.80   31.69
  YBADJ   GE_CM       8.70   11.52   14.00   16.05   17.61   18.64
  YBADJ   GE_CM      19.10   18.94   18.19   16.89   15.08   12.81

  URBANSRC ALL
  SRCGROUP ALL
SO FINISHED
**
*******************************************
** AERMOD RECEPTOR PATHWAY
*******************************************
**
**
RE STARTING
** DESCRREC "FENCEPRI" "CARTESIAN PLANT BOUNDARY PRIMARY RECEPTORS"
  DISCCART   378685.36  3782449.25  173.24  951.68
  DISCCART   378942.85  3782219.90  169.00  951.68
  DISCCART   379134.94  3782428.55  165.08  951.68
  DISCCART   378892.34  3782671.14  169.92  951.68
** DESCRREC "FENCEINT" "CARTESIAN PLANT BOUNDARY INTERMEDIATE RECEPTORS"
  DISCCART   378722.14  3782416.49  172.66  951.68
  DISCCART   378758.93  3782383.72  172.18  951.68
  DISCCART   378795.71  3782350.96  171.71  951.68
  DISCCART   378832.50  3782318.19  171.33  951.68
  DISCCART   378869.28  3782285.43  170.72  951.68
  DISCCART   378906.07  3782252.66  169.88  951.68
  DISCCART   378974.86  3782254.67  169.16  951.68
```

(3)

```
  DISCCART   381100.00  3785700.00 543.56  951.68
  DISCCART   381200.00  3785700.00 569.74  951.68
  DISCCART   381300.00  3785700.00 531.11  951.68
  DISCCART   381400.00  3785700.00 573.44  951.68
  DISCCART   381500.00  3785700.00 601.54  951.68
  DISCCART   381600.00  3785700.00 561.55  951.68
  DISCCART   381700.00  3785700.00 585.99  951.68
  DISCCART   381800.00  3785700.00 544.13  951.68
  DISCCART   381900.00  3785700.00 617.86  951.68
  DISCCART   382000.00  3785700.00 615.76  951.68
  DISCCART   382100.00  3785700.00 582.09  951.68
  DISCCART   382200.00  3785700.00 589.74  951.68
RE FINISHED
**
*******************************************
** AERMOD METEOROLOGY PATHWAY
*******************************************
**
**
ME STARTING
  SURFFILE MET\2019-2023\KBUR_V11_TRIMMED.SFC
  PROFFILE MET\2019-2023\KBUR_V11_TRIMMED.PFL
  SURFDATA 23152 2019
  UAIRDATA 3190 2019
  PROFBASE 236.0 METERS
ME FINISHED
**
*******************************************
** AERMOD OUTPUT PATHWAY
*******************************************
**
**
OU STARTING
  RECTABLE ALLAVE 1ST 4TH 8TH
  RECTABLE 1 1ST 4TH 8TH
** AUTO-GENERATED PLOTFILES
  PLOTFILE   1 ALL 1ST MPP_20.AD\01H1GALL.PLT 31
  PLOTFILE   1 ALL 4TH MPP_20.AD\01H4GALL.PLT 32
  PLOTFILE   1 ALL 8TH MPP_20.AD\01H8GALL.PLT 33
  MXDYBYYR ALL MPP_20.AD\MXDYBYYR_ALL_SO2.DAT 34
  MAXDAILY ALL MPP_20.AD\MAXDAILY_ALL_SO2.DAT 35
OU FINISHED

  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          2 Warning Message(s)
```

A Total of 0 Informational Message(s)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

ME W186	5675	MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used	0.50
ME W187	5675	MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET	

****
*** SETUP Finishes Successfully ***
****

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:
* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* Half-life of 4 hrs for URBAN SO2.
* Model Uses URBAN Dispersion Algorithm for the SBL for 1 Source(s),
for Total of 1 Urban Area(s):
Urban Population = 9663345.0 ; Urban Roughness Length = 1.000 m
* Urban Roughness Length of 1.0 Meter Used.
* ADJ_U* - Use ADJ_U* option for SBL in AERMET
* CCVR_Sub - Meteorological data includes CCVR substitutions
* TEMP_Sub - Meteorological data includes TEMP substitutions
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: SO2

**Note that special processing requirements apply for the 1-hour SO2 NAAQS - check available guidance.
Model will process user-specified ranks of daily maximum 1-hour values averaged across the number of years modeled.

**Model Calculates 1 Short Term Average(s) of: 1-HR

**This Run Includes: 1 Source(s); 1 Source Group(s); and 5570 Receptor(s)

with: 1 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 0 AREA type source(s)
and: 0 LINE source(s)
and: 0 RLINE/RLINEXT source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with a total of 0 line(s)
and: 0 SWPOINT source(s)

**Model Set To Continue RUNning After the Setup Testing.

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
GE_CM	0	0.24200E+00	378903.7	3782597.2	170.7	45.70	356.40	20.10	5.80	YES	YES	NO	

7

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM 8TH-HIGHEST MAX DAILY 1-HR RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF SO2 IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	0.29977	AT (378800.00, 3782900.00, 175.74, 951.68, 0.00) DC
	2ND HIGHEST VALUE IS	0.29732	AT (378900.00, 3782900.00, 177.21, 951.68, 0.00) DC
	3RD HIGHEST VALUE IS	0.29296	AT (378600.00, 3782800.00, 175.30, 951.68, 0.00) DC
	4TH HIGHEST VALUE IS	0.28992	AT (378900.00, 3783000.00, 178.50, 951.68, 0.00) DC
	5TH HIGHEST VALUE IS	0.28727	AT (378700.00, 3782900.00, 173.63, 951.68, 0.00) DC
	6TH HIGHEST VALUE IS	0.28571	AT (378700.00, 3782800.00, 173.04, 951.68, 0.00) DC
	7TH HIGHEST VALUE IS	0.28413	AT (378800.00, 3783000.00, 177.81, 951.68, 0.00) DC
	8TH HIGHEST VALUE IS	0.27716	AT (378600.00, 3782900.00, 175.96, 951.68, 0.00) DC
	9TH HIGHEST VALUE IS	0.27431	AT (378800.00, 3782800.00, 173.71, 951.68, 0.00) DC
	10TH HIGHEST VALUE IS	0.26588	AT (378700.00, 3783000.00, 177.01, 951.68, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 1628 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 833 Calm Hours Identified

A Total of 795 Missing Hours Identified (1.81 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
ME W186 5675 MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used 0.50
ME W187 5675 MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

****
*** AERMOD Finishes Successfully ***
****

Maximum SO_2 Concentration (1-hr, 24-hr CAAQS)

1

SO2 → Normal Operation

1-hr, 24-hr → CAAQS

```
** Lakes Environmental AERMOD MPI
**
*******************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 12.0.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 9/14/2024
** FILE: C:\BURBANK\MPP_21\MPP_21.ADI
**
*******************************************
**
**
*******************************************
** AERMOD CONTROL PATHWAY
*******************************************
**
**
CO STARTING
   TITLEONE MPP 24 NORMAL OPERATION, SOX CT+DB, 1-HR, 24-HR
   TITLETWO BURBANK METEOROLOGICAL DATA (2018-2022)
   MODELOPT DFAULT CONC
   AVERTIME 1 24
   URBANOPT 9663345 LOS_ANGELES_COUNTY
   POLLUTID SO2 H2H
   RUNORNOT RUN
CO FINISHED
**
*******************************************
** AERMOD SOURCE PATHWAY
*******************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
   LOCATION GE_CM       POINT     378903.730  3782597.160     170.688
** DESCRSRC GE_CM
** SOURCE PARAMETERS **
   SRCPARAM GE_CM         0.242   45.700   356.400     20.1      5.8

** BUILDING DOWNWASH **
   BUILDHGT GE_CM         25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM         25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM         25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM         25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM         25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM         25.30   25.30   25.30   25.30   25.30   25.30

   BUILDWID GE_CM         23.06   48.94   42.62   54.01   52.65   69.24
```

```
  DISCCART   381100.00  3785700.00  543.56  951.68
  DISCCART   381200.00  3785700.00  569.74  951.68
  DISCCART   381300.00  3785700.00  531.11  951.68
  DISCCART   381400.00  3785700.00  573.44  951.68
  DISCCART   381500.00  3785700.00  601.54  951.68
  DISCCART   381600.00  3785700.00  561.55  951.68
  DISCCART   381700.00  3785700.00  585.99  951.68
  DISCCART   381800.00  3785700.00  544.13  951.68
  DISCCART   381900.00  3785700.00  617.86  951.68
  DISCCART   382000.00  3785700.00  615.76  951.68
  DISCCART   382100.00  3785700.00  582.09  951.68
  DISCCART   382200.00  3785700.00  589.74  951.68
RE FINISHED
**
********************************************
** AERMOD METEOROLOGY PATHWAY
********************************************
**
**
ME STARTING
  SURFFILE MET\2019-2023\KBUR_V11_TRIMMED.SFC
  PROFFILE MET\2019-2023\KBUR_V11_TRIMMED.PFL
  SURFDATA 23152 2019
  UAIRDATA 3190 2019
  PROFBASE 236.0 METERS
ME FINISHED
**
********************************************
** AERMOD OUTPUT PATHWAY
********************************************
**
**
OU STARTING
  RECTABLE ALLAVE 1ST
  RECTABLE 1 1ST
  RECTABLE 24 1ST
** AUTO-GENERATED PLOTFILES
  PLOTFILE   1 ALL 1ST MPP_21.AD\01H1GALL.PLT 31
  PLOTFILE   24 ALL 1ST MPP_21.AD\24H1GALL.PLT 32
OU FINISHED


 *** Message Summary For AERMOD Model Setup ***

 --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          3 Warning Message(s)
 A Total of          0 Informational Message(s)
```

③

```
*** AERMOD - VERSION 23132 ***   *** MPP 24 NORMAL OPERATION, SOX CT+DB, 1-HR, 24-HR              ***      09/14/24
*** AERMET - VERSION  22112 ***  *** BURBANK METEOROLOGICAL DATA (2018-2022)                    ***      13:19:47
                                                                                   PAGE   1
*** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              ***     MODEL SETUP OPTIONS SUMMARY      ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

** Model Options Selected:
    * Model Uses Regulatory DEFAULT Options
    * Model Is Setup For Calculation of Average CONCentration Values.
    * NO GAS DEPOSITION Data Provided.
    * NO PARTICLE DEPOSITION Data Provided.
    * Model Uses NO DRY DEPLETION. DDPLETE  =  F
    * Model Uses NO WET DEPLETION. WETDPLT  =  F
    * Stack-tip Downwash.
    * Model Accounts for ELEVated Terrain Effects.
    * Use Calms Processing Routine.
    * Use Missing Data Processing Routine.
    * Half-life of 4 hrs for URBAN SO2.
    * Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
      for Total of    1 Urban Area(s):
  Urban Population =   9663345.0 ;  Urban Roughness Length =  1.000 m
    * Urban Roughness Length of 1.0 Meter Used.
    * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
    * CCVR_Sub - Meteorological data includes CCVR substitutions
    * TEMP_Sub - Meteorological data includes TEMP substitutions
    * Model Assumes No FLAGPOLE Receptor Heights.
    * The User Specified a Pollutant Type of: SO2

**NOTE: Special processing requirements applicable for the 1-hour SO2 NAAQS have been disabled!!!
        User has specified H2H on the POLLUTID keyword.
        High ranked 1-hour values are NOT averaged across the number of years modeled, and
        complete years of data are NOT required.

**Model Calculates  2 Short Term Average(s) of:   1-HR  24-HR

**This Run Includes:      1 Source(s);       1 Source Group(s); and     5570 Receptor(s)

              with:     1 POINT(s), including
                      0 POINTCAP(s) and      0 POINTHOR(s)
               and:     0 VOLUME source(s)
               and:     0 AREA type source(s)
               and:     0 LINE source(s)
               and:     0 RLINE/RLINEXT source(s)
               and:     0 OPENPIT source(s)
               and:     0 BUOYANT LINE source(s) with a total of     0 line(s)
               and:     0 SWPOINT source(s)
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
GE_CM	0	0.24200E+00	378903.7	3782597.2	170.7	45.70	356.40	20.10	5.80	YES	YES	NO	

```
*** AERMOD - VERSION 23132 ***   *** MPP 24 NORMAL OPERATION, SOX CT+DB, 1-HR, 24-HR          ***      09/14/24
*** AERMET - VERSION  22112 ***   *** BURBANK METEOROLOGICAL DATA (2018-2022)                 ***     13:19:47
                                                                                      PAGE 210
*** MODELOPTs:   RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

                          ** CONC OF SO2      IN MICROGRAMS/M**3                    **

                                           DATE                                NETWORK
GROUP ID                    AVERAGE CONC     (YYMMDDHH)         RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)   OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL     HIGH   1ST HIGH VALUE IS       0.36460  ON 20073112: AT (  378800.00,  3782900.00,    175.74,    951.68,     0.00)  DC

 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF SO2 IN MICROGRAMS/M**3 **

```
                                        DATE                              NETWORK
GROUP ID                 AVERAGE CONC  (YYMMDDHH)        RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL    HIGH  1ST HIGH VALUE IS    0.14639  ON 20021024: AT ( 378500.00, 3782100.00,   169.78,   951.68,    0.00)  DC
```

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

7

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 3 Warning Message(s)
A Total of 1628 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 833 Calm Hours Identified

A Total of 795 Missing Hours Identified (1.81 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

CO W276	24	POLLID: Special proc for 1h-NO2/SO2 24hPM25 NAAQS disabled	SO2 H2H
ME W186	5675	MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used	0.50
ME W187	5675	MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET	

****
*** AERMOD Finishes Successfully ***
****

Maximum NO_2 Concentration (1-hr CAAQS)

①

NO2 → Commissioning

5B → CAAQS
(MPP_25)

```
** Lakes Environmental AERMOD MPI
**
*******************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 12.0.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 11/24/2024
** FILE: C:\BURBANK\MPP_25\MPP_25.ADI
**
*******************************************
**
**
*******************************************
** AERMOD CONTROL PATHWAY
*******************************************
**
**
CO STARTING
   TITLEONE MPP 24 STARTUP OPERATION, TASK 5B, NO2 1-HR CAAQS
   TITLETWO BURBANK METEOROLOGICAL DATA (2018-2022)
   MODELOPT DFAULT CONC
   AVERTIME 1
   URBANOPT 9663345 LOS_ANGELES_COUNTY
   POLLUTID NO2 H1H
   RUNORNOT RUN
CO FINISHED
**
*******************************************
** AERMOD SOURCE PATHWAY
*******************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
   LOCATION GE_CM      POINT    378903.730 3782597.160     170.688
** DESCRSRC GE_CM
** SOURCE PARAMETERS **
   SRCPARAM GE_CM        16.002   45.700  361.480     9.56     5.8

** BUILDING DOWNWASH **
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30

   BUILDWID GE_CM        23.06   48.94   42.62   54.01   52.65   69.24
```

```
  DISCCART   381100.00  3785700.00  543.56  951.68
  DISCCART   381200.00  3785700.00  569.74  951.68
  DISCCART   381300.00  3785700.00  531.11  951.68
  DISCCART   381400.00  3785700.00  573.44  951.68
  DISCCART   381500.00  3785700.00  601.54  951.68
  DISCCART   381600.00  3785700.00  561.55  951.68
  DISCCART   381700.00  3785700.00  585.99  951.68
  DISCCART   381800.00  3785700.00  544.13  951.68
  DISCCART   381900.00  3785700.00  617.86  951.68
  DISCCART   382000.00  3785700.00  615.76  951.68
  DISCCART   382100.00  3785700.00  582.09  951.68
  DISCCART   382200.00  3785700.00  589.74  951.68
RE FINISHED
**
********************************************
** AERMOD METEOROLOGY PATHWAY
********************************************
**
**
ME STARTING
  SURFFILE MET\2019-2023\KBUR_V11_TRIMMED.SFC
  PROFFILE MET\2019-2023\KBUR_V11_TRIMMED.PFL
  SURFDATA 23152 2019
  UAIRDATA 3190 2019
  PROFBASE 236.0 METERS
ME FINISHED
**
********************************************
** AERMOD OUTPUT PATHWAY
********************************************
**
**
OU STARTING
  RECTABLE ALLAVE 1ST 8TH
  RECTABLE 1 1ST 8TH
** AUTO-GENERATED PLOTFILES
  PLOTFILE   1 ALL 1ST MPP_25.AD\01H1GALL.PLT 31
  PLOTFILE   1 ALL 8TH MPP_25.AD\01H8GALL.PLT 32
OU FINISHED

 *** Message Summary For AERMOD Model Setup ***

 --------- Summary of Total Messages --------

 A Total of         0 Fatal Error Message(s)
 A Total of         3 Warning Message(s)
 A Total of         0 Informational Message(s)
```

3

```
 ******** FATAL ERROR MESSAGES ********
          *** NONE ***

 ********  WARNING MESSAGES  ********
CO W276    24   POLLID: Special proc for 1h-NO2/SO2 24hPM25 NAAQS disabled    NO2 H1H
ME W186   5675    MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used       0.50
ME W187   5675    MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

***********************************
*** SETUP Finishes Successfully ***
***********************************
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

- -

** Model Options Selected:
 * Model Uses Regulatory DEFAULT Options
 * Model Is Setup For Calculation of Average CONCentration Values.
 * NO GAS DEPOSITION Data Provided.
 * NO PARTICLE DEPOSITION Data Provided.
 * Model Uses NO DRY DEPLETION. DDPLETE = F
 * Model Uses NO WET DEPLETION. WETDPLT = F
 * Stack-tip Downwash.
 * Model Accounts for ELEVated Terrain Effects.
 * Use Calms Processing Routine.
 * Use Missing Data Processing Routine.
 * No Exponential Decay.
 * Full Conversion Assumed for NO2.
 * Model Uses URBAN Dispersion Algorithm for the SBL for 1 Source(s),
 for Total of 1 Urban Area(s):
 Urban Population = 9663345.0 ; Urban Roughness Length = 1.000 m
 * Urban Roughness Length of 1.0 Meter Used.
 * ADJ_U* - Use ADJ_U* option for SBL in AERMET
 * CCVR_Sub - Meteorological data includes CCVR substitutions
 * TEMP_Sub - Meteorological data includes TEMP substitutions
 * Model Assumes No FLAGPOLE Receptor Heights.
 * The User Specified a Pollutant Type of: NO2

**NOTE: Special processing requirements applicable for the 1-hour NO2 NAAQS have been disabled!!!
 User has specified H1H on the POLLUTID keyword.
 High ranked 1-hour values are NOT averaged across the number of years modeled, and
 complete years of data are NOT required.

**Model Calculates 1 Short Term Average(s) of: 1-HR

**This Run Includes: 1 Source(s); 1 Source Group(s); and 5570 Receptor(s)

 with: 1 POINT(s), including
 0 POINTCAP(s) and 0 POINTHOR(s)
 and: 0 VOLUME source(s)
 and: 0 AREA type source(s)
 and: 0 LINE source(s)
 and: 0 RLINE/RLINEXT source(s)
 and: 0 OPENPIT source(s)
 and: 0 BUOYANT LINE source(s) with a total of 0 line(s)
 and: 0 SWPOINT source(s)

5

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
GE_CM	0	0.16002E+02	378903.7	3782597.2	170.7	45.70	361.48	9.56	5.80	YES	YES	NO	

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

```
                                          DATE                         NETWORK
GROUP ID               AVERAGE CONC    (YYMMDDHH)      RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
-------------------------------------------------------------------------------------

ALL     HIGH  1ST HIGH VALUE IS    43.41155  ON 19033014: AT ( 379200.00, 3782800.00,   179.92,   951.68,    0.00) DC
        HIGH  8TH HIGH VALUE IS    37.14944  ON 21083012: AT ( 378800.00, 3782800.00,   173.71,   951.68,    0.00) DC
```

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

⑦

*** AERMOD - VERSION 23132 *** *** MPP 24 STARTUP OPERATION, TASK 5B, NO2 1-HR CAAQS *** 11/24/24
*** AERMET - VERSION 22112 *** *** BURBANK METEOROLOGICAL DATA (2018-2022) *** 18:17:24
PAGE 209
*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 8TH HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE_CM ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
377300.00	3785700.00	4.84290	(19021323)	377400.00	3785700.00	5.01675	(22060219)
377500.00	3785700.00	4.97460	(20040603)	377600.00	3785700.00	4.84492	(20040603)
377700.00	3785700.00	4.72828	(19031919)	377800.00	3785700.00	4.62991	(23090818)
377900.00	3785700.00	4.63623	(22073119)	378000.00	3785700.00	4.79893	(23081819)
378100.00	3785700.00	4.97353	(22081919)	378200.00	3785700.00	5.12777	(19082419)
378300.00	3785700.00	5.36992	(22080519)	378400.00	3785700.00	6.64773	(22090724)
378500.00	3785700.00	6.26658	(22080321)	378600.00	3785700.00	6.03786	(19100518)
378700.00	3785700.00	6.31379	(23091121)	378800.00	3785700.00	7.27130	(23090220)
378900.00	3785700.00	7.14700	(23100820)	379000.00	3785700.00	7.00153	(22011620)
379100.00	3785700.00	7.02347	(23091005)	379200.00	3785700.00	6.91851	(20090919)
379300.00	3785700.00	6.42103	(22060504)	379400.00	3785700.00	6.71030	(20092724)
379500.00	3785700.00	6.30858	(20092206)	379600.00	3785700.00	6.72940	(23042019)
379700.00	3785700.00	6.68071	(22073005)	379800.00	3785700.00	6.53163	(23101104)
379900.00	3785700.00	6.56401	(20022220)	380000.00	3785700.00	6.53015	(21120706)
380100.00	3785700.00	6.45866	(20010217)	380200.00	3785700.00	6.31467	(23102319)
380300.00	3785700.00	5.97263	(23111505)	380400.00	3785700.00	5.55588	(23072705)
380500.00	3785700.00	5.39855	(19013004)	380600.00	3785700.00	4.81844	(19022304)
380700.00	3785700.00	5.00573	(21092823)	380800.00	3785700.00	5.28164	(19081405)
380900.00	3785700.00	5.10901	(21011619)	381000.00	3785700.00	4.70310	(20102301)
381100.00	3785700.00	4.39675	(23110204)	381200.00	3785700.00	4.18117	(22083102)
381300.00	3785700.00	4.38463	(19021301)	381400.00	3785700.00	4.08322	(19101504)
381500.00	3785700.00	3.83127	(20102207)	381600.00	3785700.00	4.06024	(21113021)
381700.00	3785700.00	3.87905	(23071105)	381800.00	3785700.00	4.06652	(21092906)
381900.00	3785700.00	3.60965	(19122824)	382000.00	3785700.00	3.54975	(20120706)
382100.00	3785700.00	3.66378	(22040606)	382200.00	3785700.00	3.53790	(22090805)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

```
                                          DATE                          NETWORK
GROUP ID              AVERAGE CONC     (YYMMDDHH)        RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)   OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL     HIGH  1ST HIGH VALUE IS     43.41155  ON 19033014: AT ( 379200.00, 3782800.00,  179.92,  951.68,   0.00) DC
        HIGH  8TH HIGH VALUE IS     37.14944  ON 21083012: AT ( 378800.00, 3782800.00,  173.71,  951.68,   0.00) DC
```

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

9

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 3 Warning Message(s)
A Total of 1628 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 833 Calm Hours Identified

A Total of 795 Missing Hours Identified (1.81 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

CO W276	24	POLLID: Special proc for 1h-NO2/SO2 24hPM25 NAAQS disabled	NO2 H1H
ME W186	5675	MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used	0.50
ME W187	5675	MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET	

****
*** AERMOD Finishes Successfully ***
****

Maximum NO_2 Concentration (1-hr NAAQS)

1

NO2 → Startup

NAAQS

```
** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 12.0.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 9/14/2024
** FILE: C:\BURBANK\MPP_07\MPP_07.ADI
**
****************************************
**
**
****************************************
** AERMOD CONTROL PATHWAY
****************************************
**
**
CO STARTING
   TITLEONE MPP 24 STARTUP OPERATION, NO2 1-HR NAAQS
   TITLETWO BURBANK METEOROLOGICAL DATA (2018-2022)
   MODELOPT DFAULT CONC
   AVERTIME 1
   URBANOPT 9663345 LOS_ANGELES_COUNTY
   POLLUTID NO2
   RUNORNOT RUN
CO FINISHED
**
****************************************
** AERMOD SOURCE PATHWAY
****************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
   LOCATION GE_CM      POINT     378903.730  3782597.160      170.688
** DESCRSRC GE_CM
** SOURCE PARAMETERS **
   SRCPARAM GE_CM         10.878    45.700   361.600      7.2       5.8

** BUILDING DOWNWASH **
   BUILDHGT GE_CM        25.30    21.95    21.95    21.95    21.95    21.95
   BUILDHGT GE_CM        25.30    25.30    25.30    25.30    25.30    25.30
   BUILDHGT GE_CM        25.30    25.30    25.30    25.30    25.30    25.30
   BUILDHGT GE_CM        25.30    21.95    21.95    21.95    21.95    21.95
   BUILDHGT GE_CM        25.30    25.30    25.30    25.30    25.30    25.30
   BUILDHGT GE_CM        25.30    25.30    25.30    25.30    25.30    25.30

   BUILDWID GE_CM        23.05    56.02    55.86    54.01    61.00    69.24
```

```
   DISCCART    381100.00  3785700.00  543.56  951.68
   DISCCART    381200.00  3785700.00  569.74  951.68
   DISCCART    381300.00  3785700.00  531.11  951.68
   DISCCART    381400.00  3785700.00  573.44  951.68
   DISCCART    381500.00  3785700.00  601.54  951.68
   DISCCART    381600.00  3785700.00  561.55  951.68
   DISCCART    381700.00  3785700.00  585.99  951.68
   DISCCART    381800.00  3785700.00  544.13  951.68
   DISCCART    381900.00  3785700.00  617.86  951.68
   DISCCART    382000.00  3785700.00  615.76  951.68
   DISCCART    382100.00  3785700.00  582.09  951.68
   DISCCART    382200.00  3785700.00  589.74  951.68
RE FINISHED
**
*******************************************
** AERMOD METEOROLOGY PATHWAY
*******************************************
**
**
ME STARTING
   SURFFILE MET\2019-2023\KBUR_V11_TRIMMED.SFC
   PROFFILE MET\2019-2023\KBUR_V11_TRIMMED.PFL
   SURFDATA 23152 2019
   UAIRDATA 3190 2019
   PROFBASE 236.0 METERS
ME FINISHED
**
*******************************************
** AERMOD OUTPUT PATHWAY
*******************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST 8TH
   RECTABLE 1 1ST 8TH
** AUTO-GENERATED PLOTFILES
   PLOTFILE   1 ALL 1ST MPP_07.AD\01H1GALL.PLT 31
   PLOTFILE   1 ALL 8TH MPP_07.AD\01H8GALL.PLT 32
   MXDYBYYR ALL MPP_07.AD\MXDYBYYR_ALL_NO2.DAT 33
   MAXDAILY ALL MPP_07.AD\MAXDAILY_ALL_NO2.DAT 34
OU FINISHED

 *** Message Summary For AERMOD Model Setup ***

 --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          2 Warning Message(s)
 A Total of          0 Informational Message(s)
```

37

```
******** FATAL ERROR MESSAGES ********
         *** NONE ***

******** WARNING MESSAGES ********
ME W186  5675   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used       0.50
ME W187  5675   MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

*************************************
*** SETUP Finishes Successfully ***
*************************************
```

```
*** MODELOPTs:   RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                         ***     MODEL SETUP OPTIONS SUMMARY      ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

** Model Options Selected:
     * Model Uses Regulatory DEFAULT Options
     * Model Is Setup For Calculation of Average CONCentration Values.
     * NO GAS DEPOSITION Data Provided.
     * NO PARTICLE DEPOSITION Data Provided.
     * Model Uses NO DRY DEPLETION. DDPLETE  =  F
     * Model Uses NO WET DEPLETION. WETDPLT  =  F
     * Stack-tip Downwash.
     * Model Accounts for ELEVated Terrain Effects.
     * Use Calms Processing Routine.
     * Use Missing Data Processing Routine.
     * No Exponential Decay.
     * Full Conversion Assumed for NO2.
     * Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
       for Total of     1 Urban Area(s):
   Urban Population =   9663345.0 ;  Urban Roughness Length =  1.000 m
     * Urban Roughness Length of 1.0 Meter Used.
     * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
     * CCVR_Sub - Meteorological data includes CCVR substitutions
     * TEMP_Sub - Meteorological data includes TEMP substitutions
     * Model Assumes No FLAGPOLE Receptor Heights.
     * The User Specified a Pollutant Type of: NO2

**Note that special processing requirements apply for the 1-hour NO2 NAAQS - check available guidance.
  Model will process user-specified ranks of daily maximum 1-hour values averaged across the number of years modeled.
  For annual NO2 NAAQS modeling, the multi-year maximum of PERIOD values can be simulated using the MULTYEAR keyword.
  Multi-year PERIOD and 1-hour values should only be done in a single model run using the MULTYEAR option with a
  single multi-year meteorological data file using STARTEND keyword.

**Model Calculates  1 Short Term Average(s) of:   1-HR

**This Run Includes:      1 Source(s);       1 Source Group(s); and    5570 Receptor(s)

            with:     1 POINT(s), including
                    0 POINTCAP(s) and      0 POINTHOR(s)
             and:     0 VOLUME source(s)
             and:     0 AREA type source(s)
             and:     0 LINE source(s)
             and:     0 RLINE/RLINEXT source(s)
             and:     0 OPENPIT source(s)
             and:     0 BUOYANT LINE source(s) with a total of     0 line(s)
             and:     0 SWPOINT source(s)
```

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
GE_CM	0	0.10878E+02	378903.7	3782597.2	170.7	45.70	361.60	7.20	5.80	YES	YES	NO	

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM 1ST-HIGHEST MAX DAILY 1-HR RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	33.15433 AT	(379000.00, 3782900.00, 178.96, 951.68, 0.00)	DC
	2ND HIGHEST VALUE IS	32.90843 AT	(378800.00, 3782800.00, 173.71, 951.68, 0.00)	DC
	3RD HIGHEST VALUE IS	32.14513 AT	(379000.00, 3782800.00, 177.66, 951.68, 0.00)	DC
	4TH HIGHEST VALUE IS	32.09758 AT	(378700.00, 3782800.00, 173.04, 951.68, 0.00)	DC
	5TH HIGHEST VALUE IS	31.13285 AT	(378900.00, 3782800.00, 175.13, 951.68, 0.00)	DC
	6TH HIGHEST VALUE IS	31.10530 AT	(378700.00, 3782700.00, 173.52, 951.68, 0.00)	DC
	7TH HIGHEST VALUE IS	30.56678 AT	(378600.00, 3782800.00, 175.30, 951.68, 0.00)	DC
	8TH HIGHEST VALUE IS	30.02779 AT	(378900.00, 3782900.00, 177.21, 951.68, 0.00)	DC
	9TH HIGHEST VALUE IS	29.66056 AT	(378700.00, 3782900.00, 173.63, 951.68, 0.00)	DC
	10TH HIGHEST VALUE IS	29.62823 AT	(378800.00, 3782900.00, 175.74, 951.68, 0.00)	DC

7

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM 8TH-HIGHEST MAX DAILY 1-HR RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	29.01015 AT	(378800.00, 3782800.00, 173.71, 951.68, 0.00)	DC
	2ND HIGHEST VALUE IS	28.80448 AT	(378700.00, 3782800.00, 173.04, 951.68, 0.00)	DC
	3RD HIGHEST VALUE IS	28.32935 AT	(378900.00, 3782900.00, 177.21, 951.68, 0.00)	DC
	4TH HIGHEST VALUE IS	28.00270 AT	(378900.00, 3782800.00, 175.13, 951.68, 0.00)	DC
	5TH HIGHEST VALUE IS	27.71421 AT	(378700.00, 3782700.00, 173.52, 951.68, 0.00)	DC
	6TH HIGHEST VALUE IS	27.23014 AT	(378800.00, 3782900.00, 175.74, 951.68, 0.00)	DC
	7TH HIGHEST VALUE IS	26.11942 AT	(378600.00, 3782800.00, 175.30, 951.68, 0.00)	DC
	8TH HIGHEST VALUE IS	25.34743 AT	(378700.00, 3782900.00, 173.63, 951.68, 0.00)	DC
	9TH HIGHEST VALUE IS	24.99299 AT	(378900.00, 3783000.00, 178.50, 951.68, 0.00)	DC
	10TH HIGHEST VALUE IS	24.96976 AT	(379000.00, 3782900.00, 178.96, 951.68, 0.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 1628 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 833 Calm Hours Identified

A Total of 795 Missing Hours Identified (1.81 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

ME W186	5675	MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used	0.50
ME W187	5675	MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET	

****
*** AERMOD Finishes Successfully ***
****

Maximum NO_2 Concentration (Annual)

1

2022

NOx – Annual for 2022

```
** Lakes Environmental AERMOD MPI
**
*****************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 12.0.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 9/15/2024
** FILE: C:\BURBANK\MPP_05_4\MPP_05_4.ADI
**
*****************************************
**
**
*****************************************
** AERMOD CONTROL PATHWAY
*****************************************
**
**
CO STARTING
   TITLEONE MPP 24 NORMAL OPERATION, NO2 ANNUAL (2021)
   TITLETWO BURBANK METEOROLOGICAL DATA (2018-2022)
   MODELOPT DFAULT CONC
   AVERTIME ANNUAL
   URBANOPT 9663345 LOS_ANGELES_COUNTY
   POLLUTID NO2
   RUNORNOT RUN
CO FINISHED
**
*****************************************
** AERMOD SOURCE PATHWAY
*****************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
   LOCATION GE_CM      POINT     378903.730  3782597.160     170.688
** DESCRSRC GE_CM
** SOURCE PARAMETERS **
   SRCPARAM GE_CM        2.389   45.700  356.400    20.1     5.8

** BUILDING DOWNWASH **
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   21.95   21.95   21.95   21.95   21.95
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30
   BUILDHGT GE_CM        25.30   25.30   25.30   25.30   25.30   25.30

   BUILDWID GE_CM        23.05   56.02   55.86   54.01   61.00   69.24
```

```
  DISCCART   381100.00  3785700.00  543.56  951.68
  DISCCART   381200.00  3785700.00  569.74  951.68
  DISCCART   381300.00  3785700.00  531.11  951.68
  DISCCART   381400.00  3785700.00  573.44  951.68
  DISCCART   381500.00  3785700.00  601.54  951.68
  DISCCART   381600.00  3785700.00  561.55  951.68
  DISCCART   381700.00  3785700.00  585.99  951.68
  DISCCART   381800.00  3785700.00  544.13  951.68
  DISCCART   381900.00  3785700.00  617.86  951.68
  DISCCART   382000.00  3785700.00  615.76  951.68
  DISCCART   382100.00  3785700.00  582.09  951.68
  DISCCART   382200.00  3785700.00  589.74  951.68
RE FINISHED
**
*******************************************
** AERMOD METEOROLOGY PATHWAY
*******************************************
**
**
ME STARTING
  SURFFILE MET\2019-2023\KBUR_V11_TRIMMED.SFC
  PROFFILE MET\2019-2023\KBUR_V11_TRIMMED.PFL
  SURFDATA 23152 2019
  UAIRDATA 3190 2019
  PROFBASE 236.0 METERS
  STARTEND 2022 1 1 1 2022 12 31 24
ME FINISHED
**
*******************************************
** AERMOD OUTPUT PATHWAY
*******************************************
**
**
OU STARTING
** MAXIMUM ANNUAL AVERAGE POST FILES FOR EACH MET YEAR
  POSTFILE   ANNUAL ALL PLOT MPP_05_4.AD\ANNUAL_G001.PLT 31
** AUTO-GENERATED PLOTFILES
  PLOTFILE   ANNUAL ALL MPP_05_4.AD\AN00GALL.PLT 32
OU FINISHED

 *** Message Summary For AERMOD Model Setup ***

 --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          2 Warning Message(s)
 A Total of          0 Informational Message(s)
```

3

```
******** FATAL ERROR MESSAGES ********
    *** NONE ***

******** WARNING MESSAGES ********
ME W186   5676   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used      0.50
ME W187   5676   MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

************************************
*** SETUP Finishes Successfully ***
************************************
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

** Model Options Selected:
* Model Uses Regulatory DEFAULT Options
* Model Is Setup For Calculation of Average CONCentration Values.
* NO GAS DEPOSITION Data Provided.
* NO PARTICLE DEPOSITION Data Provided.
* Model Uses NO DRY DEPLETION. DDPLETE = F
* Model Uses NO WET DEPLETION. WETDPLT = F
* Stack-tip Downwash.
* Model Accounts for ELEVated Terrain Effects.
* Use Calms Processing Routine.
* Use Missing Data Processing Routine.
* No Exponential Decay.
* Full Conversion Assumed for NO2.
* Model Uses URBAN Dispersion Algorithm for the SBL for 1 Source(s),
for Total of 1 Urban Area(s):
Urban Population = 9663345.0 ; Urban Roughness Length = 1.000 m
* Urban Roughness Length of 1.0 Meter Used.
* ADJ_U* - Use ADJ_U* option for SBL in AERMET
* CCVR_Sub - Meteorological data includes CCVR substitutions
* TEMP_Sub - Meteorological data includes TEMP substitutions
* Model Assumes No FLAGPOLE Receptor Heights.
* The User Specified a Pollutant Type of: NO2

**NOTE: Special processing requirements applicable for the 1-hour NO2 NAAQS have been disabled!!!
User has specified non-standard averaging periods:
High ranked 1-hour values are NOT averaged across the number of years modeled, and
complete years of data are NOT required.

**Model Calculates ANNUAL Averages Only

**This Run Includes: 1 Source(s); 1 Source Group(s); and 5570 Receptor(s)

with: 1 POINT(s), including
0 POINTCAP(s) and 0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 0 AREA type source(s)
and: 0 LINE source(s)
and: 0 RLINE/RLINEXT source(s)
and: 0 OPENPIT source(s)
and: 0 BUOYANT LINE source(s) with a total of 0 line(s)
and: 0 SWPOINT source(s)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
GE_CM	0	0.23890E+01	378903.7	3782597.2	170.7	45.70	356.40	20.10	5.80	YES	YES	NO	

7

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 1 YEARS FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): GE_CM ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
377300.00	3785700.00	0.04629	377400.00	3785700.00	0.04762
377500.00	3785700.00	0.04918	377600.00	3785700.00	0.05082
377700.00	3785700.00	0.05261	377800.00	3785700.00	0.05461
377900.00	3785700.00	0.05698	378000.00	3785700.00	0.05969
378100.00	3785700.00	0.06253	378200.00	3785700.00	0.06494
378300.00	3785700.00	0.06785	378400.00	3785700.00	0.07439
378500.00	3785700.00	0.07377	378600.00	3785700.00	0.07202
378700.00	3785700.00	0.07131	378800.00	3785700.00	0.07335
378900.00	3785700.00	0.06974	379000.00	3785700.00	0.06413
379100.00	3785700.00	0.05869	379200.00	3785700.00	0.05344
379300.00	3785700.00	0.04714	379400.00	3785700.00	0.04285
379500.00	3785700.00	0.03773	379600.00	3785700.00	0.03428
379700.00	3785700.00	0.03069	379800.00	3785700.00	0.02759
379900.00	3785700.00	0.02491	380000.00	3785700.00	0.02271
380100.00	3785700.00	0.02085	380200.00	3785700.00	0.01928
380300.00	3785700.00	0.01799	380400.00	3785700.00	0.01661
380500.00	3785700.00	0.01556	380600.00	3785700.00	0.01422
380700.00	3785700.00	0.01393	380800.00	3785700.00	0.01355
380900.00	3785700.00	0.01297	381000.00	3785700.00	0.01240
381100.00	3785700.00	0.01188	381200.00	3785700.00	0.01145
381300.00	3785700.00	0.01149	381400.00	3785700.00	0.01101
381500.00	3785700.00	0.01065	381600.00	3785700.00	0.01075
381700.00	3785700.00	0.01043	381800.00	3785700.00	0.01056
381900.00	3785700.00	0.00994	382000.00	3785700.00	0.00982
382100.00	3785700.00	0.00991	382200.00	3785700.00	0.00974

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.35333 AT	(378800.00, 3783100.00, 178.87, 951.68, 0.00) DC	
	2ND HIGHEST VALUE IS	0.34570 AT	(378800.00, 3783000.00, 177.81, 951.68, 0.00) DC	
	3RD HIGHEST VALUE IS	0.33616 AT	(378800.00, 3783200.00, 179.91, 951.68, 0.00) DC	
	4TH HIGHEST VALUE IS	0.33597 AT	(378900.00, 3783100.00, 180.99, 951.68, 0.00) DC	
	5TH HIGHEST VALUE IS	0.32898 AT	(378900.00, 3783000.00, 178.50, 951.68, 0.00) DC	
	6TH HIGHEST VALUE IS	0.31881 AT	(378900.00, 3783200.00, 184.76, 951.68, 0.00) DC	
	7TH HIGHEST VALUE IS	0.31833 AT	(378901.97, 3783196.86, 184.64, 951.68, 0.00) DC	
	8TH HIGHEST VALUE IS	0.30991 AT	(378800.00, 3783300.00, 185.38, 951.68, 0.00) DC	
	9TH HIGHEST VALUE IS	0.30411 AT	(378929.19, 3783163.24, 183.13, 951.68, 0.00) DC	
	10TH HIGHEST VALUE IS	0.29621 AT	(378800.00, 3782900.00, 175.74, 951.68, 0.00) DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

(9)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 1123 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 55 Calm Hours Identified

A Total of 121 Missing Hours Identified (1.38 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********

ME W186	5676	MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used	0.50
ME W187	5676	MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET	

****
*** AERMOD Finishes Successfully ***
****

APPENDIX C.2
Air Dispersion Modeling and Health Risk Assessment Protocol

AIR DISPERSION MODELING
AND HEALTH RISK ASSESSMENT PROTOCOL

MAGNOLIA POWER PROJECT (MPP)
SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY
TITLE V PERMIT MODIFICATION
(Upgrade 2024)

Prepared for:

Magnolia Power Project, SCPPA
164 West Magnolia Boulevard
Burbank, CA 91502
Facility ID: 128243

Submitted to:

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4182

August 2024

PREPARED BY:

ENVIRONMENTAL MANAGEMENT PROFESSIONALS, LLC
22811 MADRONA AVENUE, TORRANCE - CALIFORNIA 90505
Tel/Fax: (310) 539-0606; e-mail: krishnanand44@msn.com

E1158

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ACRONYMS AND ABBREVIATIONS

AERMOD	AERMOD Air Dispersion Model
BWP	Burbank water and Power
CAAQS	California Ambient Air Quality Standards
CCGF	Combined Cycle Generating Facility
CO	carbon monoxide
CTG	combustion turbine generator
EMP	Environmental Management Professionals, LLC
EPA	United States Environmental Protection Agency
FAH	Fraction of Time at Home
FLM	Federal Land Manager
GEP	Good Engineering Practice
HARP2	Hot Spots Assessment and Reporting Program
MPP	Magnolia Power Project
NAAQS	National Ambient air Quality Standard
NED	National Elevation Dataset
NH_3	ammonia
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
OEHHA	California Office of Health Hazard Assessment
PM10	particulate matter of diameter less than or equal to 10 microns
PSD	Prevention of Significant Deterioration
RMP	Risk Management Policy
SCAB	South Coast Air Basin
South Coast AQMD	South Coast Air Quality Management District
SO_2	sulfur dioxide
SOx	oxides of sulfur
TAC	Toxic Air Contaminant
VOC	volatile organic compounds

SECTION 1
INTRODUCTION

The Southern California Public Power Authority (SCPPA) owns the Magnolia Power Project (MPP), a combined cycle electrical generating facility (CCGF). The plant is located in the City of Burbank and is operated by the Burbank Water and Power (BWP). The South Coast Air Quality Management District (South Coast AQMD) issued a Permit to Construct and a Temporary Permit to Operate the CCGF on May 27, 2003. The MPP was commissioned in September 2005 and placed under operation after commissioning. The last revision to the Title V Permit was made by the South Coast AQMD in 2020 and the MPP has been in operation in compliance with the revised permit conditions. The MPP is not subject to the United States Environmental Protection Agency (EPA) Prevention of Significant Deterioration (PSD) analysis requirements.

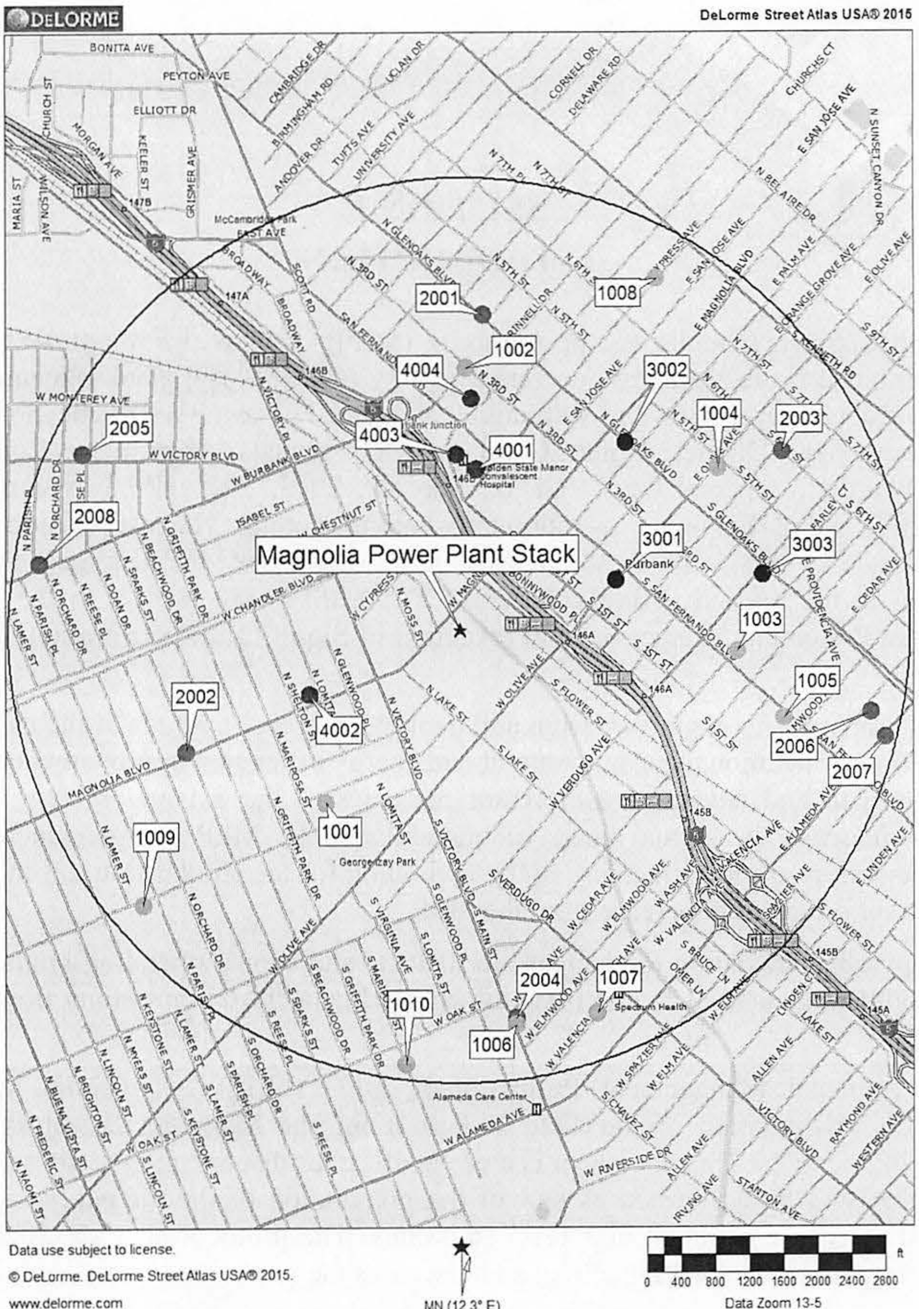
The BWP is proposing to engineer/design and deploy a targeted upgrade at the existing MPP to provide additional operational capacity/output and energy efficiency improvements by deploying advanced gas path and advanced compressor packages to the existing system. BWP is also proposing to increase the annual hours of operation of the MPP combustion turbine. These improvements will result in an increase in the fuel rating for the combustion turbine as well as in an overall power production increase from the MPP.

The above upgrades, including the increase in fuel use and annual operating hours will increase the criteria pollutants as well as the toxic air contaminant (TAC) emissions from the existing MPP.

Environmental Management Professionals, LLC (EMP) is preparing an air permit application for modification of the Title V Permit for the Magnolia Power Project for the proposed 2024 upgrades. This document is a protocol for air dispersion modeling and health risk assessment that will be performed as part of the preparation of the air permit application for project-specific criteria pollutant and TAC emissions. The protocol also specifies the impacts that will be determined through modeling, and discusses the modeling inputs that will be used for the analysis.

1.1 LOCATION DETAILS OF THE MAGNOLIA POWER PROJECT

MPP is located at 164 West Magnolia Boulevard in the City of Burbank, California, (164 West Magnolia Boulevard, Burbank, CA 91502) within an existing 23-acre power generating facility. The plant is located approximately 2,000 feet southwest of the Burbank City Hall, and it is bordered by Magnolia Blvd., on the north, Lake Street on the west, Flower Street on the east, and Olive Avenue on the south. The plant is bordered by industrial properties on all sides, and the nearest sensitive receptor (school) is located approximately 2,500 feet southwest of the facility. The site location map is shown in Figure 1-1.



- Pre-Schools and Day-Cares
- Elementary/Intermediate/High Schools
- College or University
- Hospitals

Figure 1-1
Site Location Map
Magnolia Power Project

SECTION 2
PROJECT IMPACTS TO BE DETERMINED

The project impacts to be determined through application of air dispersion models are provided below. Detailed discussions are provided separately for non-attainment criteria pollutants, attainment criteria pollutants, and toxic air contaminants.

Air quality impact analysis for the MPP Upgrade 2024 will be performed for re-commissioning, startup, normal operation and shutdown scenarios. Air quality impact analysis for re-commissioning scenario will not be performed to demonstrate compliance with the federal nitrogen dioxide (NO_2)/sulfur dioxide (SO_2) 1-hour ambient air quality standards because these standards are based on the 98th percentile/99th percentile averaged over three years, and re-commissioning operation will not be performed over three years of MPP operation.

2.1 NON-ATTAINMENT CRITERIA POLLUTANT ANALYSIS

The South Coast Air Basin is classified as a non-attainment area for particulate matter of diameter less than or equal to 10 microns (PM10) for 24-hour and annual average California Ambient Air Quality Standards (CAAQS). Thus, PM10 will be the only non-attainment criteria pollutant, which will require air dispersion modeling analysis for the MPP Upgrade project. The resulting predicted ambient concentrations will be compared to the Rule 1303 Table A-2, Allowable Change Increments to determine the significance of the impacts. The applicable concentration change increments are shown in Table 2-1. Note that PM10 impact analysis will include only primary particulates.

2.2 ATTAINMENT CRITERIA POLLUTANTS ANALYSIS

The South Coast Air Basin is classified as an attainment area for carbon monoxide (CO) CAAQS as well as National Ambient Air Quality Standard (NAAQS). Thus, as required by the South Coast AQMD Rule 1303, CO will be an attainment pollutant that will require air dispersion modeling analysis. The project incremental impact for CO will be added to an appropriate background CO concentration and the total concentration will be compared to the most stringent CAAQS or NAAQS. In consultation with the South Coast AQMD, the background CO concentrations will be determined from the most recent three years of monitored data available at the South Coast AQMD website (Years: 2021, 2022 and 2023) for the District's Los Angeles-North Main Street (060371103) Site (see Appendix A for additional information).

The South Coast Air Basin is also classified as an attainment area for SO_2 CAAQS as well as NAAQS. EMP will perform air dispersion modeling analysis for oxides of sulfur (SOx) emissions to determine the project incremental impact for SO_2 emissions. The project incremental impact for SO_2 will be added to an appropriate background SO_2 concentration and the total concentration will be compared to the most stringent CAAQS or NAAQS. In consultation with the South Coast AQMD, the background SO_2 concentrations will be determined from the most recent three years of monitored data available at the South Coast AQMD website (Years: 2021, 2022 and 2023) for the District's Los Angeles-North Main Street (060371103) Site (see Appendix A for additional information).

The South Coast Air Basin is also classified as an attainment area for National 24-hour average PM10 ambient air quality standard. Therefore, air dispersion modeling analysis for PM10 emissions will also be required. The project incremental impact for PM10 will be added to an appropriate background PM10 concentration and the total concentration will be compared to the most stringent NAAQS. In consultation with the South Coast AQMD, the background PM10 concentration will be determined from the most recent three years of monitored data available at the South Coast AQMD website (Years: 2021, 2022 and 2023) for the District's Los Angeles-North Main Street (060371103) Site.

Following the South Coast AQMD Rule 2005, facility wide oxides of nitrogen (NOx) impacts will be determined. The project incremental impact will be added to an appropriate background NO_2 concentration and the total concentration will be compared to the most stringent CAAQS or NAAQS. The background NO_2 concentrations will be determined from the most recent three years of monitored data which has been provided by the South Coast AQMD (Years: 2021, 2022 and 2023) for the District's East San Fernando Valley (060374010) Site (see Appendix A for additional information).

The NOx impacts will be determined initially assuming 100 percent conversion of the project NOx emissions to NO_2 emissions (Tier 1). However, if the total conversion assumption results in project NO_2 impacts greater than CAAQS or NAAQS, then Tier 2: ARM2 Ratio Option (ARM2 Ratio – minimum NO_2/NOx ratio of 0.5 and maximum NO_2/NOx ratio of 0.9) will be applied as appropriate for estimating NO_2 concentrations.

2.3 SHORELINE FUMIGATION AND INVERSION BREAK-UP ANALYSIS

The South Coast AQMD Modeling Guidance for AERMOD requires that facilities with tall stacks located on the Pacific Coast shoreline and subject to the PSD program should evaluate impacts resulting from shoreline fumigation and inversion break-up. Since the MPP facility is not located on the Pacific Coast shoreline and subject to the PSD program, shoreline fumigation and inversion breakup analysis will not be required and will not be performed.

2.4 TOXIC AIR CONTAMINANTS

The impact of TACs will be determined by performing a health risk assessment (HRA). The cancer, acute non-cancer, and chronic non-cancer impacts will be determined for this repowering project. Health risk assessment will be performed for the MPP Upgrade project assuming normal operation of the combustion turbine throughout the year which will provide a conservative estimate of the health risks from the MPP Upgrade project. Additional details of the HRA methodology are provided in Section 4.

Table 2-1
Air Quality Significance Thresholds for Non-Attainment Pollutant, PM10

Pollutant	Significance Threshold (Allowable Change Increments)
24-hour Annual geometric mean	2.5 ug/m^3 1.0 ug/m^3
ug/m^3 = microgram per cubic meter	

Table 2-2
Air Quality Significance Thresholds for Attainment Pollutants

Pollutant	Significance Threshold (Ambient Air Quality Standards)
CO 1-hour (California) 8-hour (California) 1-hour (NAAQS) 8-hour (NAAQS)	 20 ppm (23 mg/m^3) 9 ppm (10 mg/m^3) 35 ppm (40 mg/m^3) 9 ppm (10 mg/m^3)
PM10 24-hour (NAAQS)	 150 ug/m^3
NO_2 1-hour (California) Annual (California) 1-hour (NAAQS), 98th percentile averaged over 3 years Annual (NAAQS)	 0.18 ppm (339 ug/m^3) 0.03 ppm (57 ug/m^3) 100 ppb (188 ug/m^3) 0.053 ppm (100 ug/m^3)
SO_2 1-hour (California) 24-hr (California) 1-hour (NAAQS), 99th percentile averaged over 3 years	 0.25 ppm (655 ug/m^3) 0.04 ppm (105 ug/m^3) 75 ppb (196 ug/m^3)
ug/m^3 = microgram per cubic meter; mg/m^3 = milligram per cubic meter; ppm = parts per million, ppb = parts per billion	

SECTION 3
AIR DISPERSION MODEL SELECTION AND APPLICATION

Atmospheric dispersion modeling will be conducted to analyze potential localized ambient air quality impacts associated with the operation of the upgraded MPP. The atmospheric dispersion modeling methodology proposed to be used is based on generally accepted modeling practices and modeling guidelines of both the United States Environmental Protection Agency (EPA) and the South Coast AQMD. All dispersion modeling will be performed using the latest version of the AERMOD dispersion model.

3.1 MODEL SELECTION

The dispersion modeling methodology proposed to be used will follow both EPA and South Coast AQMD guidelines. The AERMOD model proposed to be used for air dispersion modeling analysis is an EPA model used for simulating the transport and dispersion of emission sources in areas of flat as well as in elevated terrains.

3.2 MODELING OPTIONS

It is proposed to follow EPA and South Coast AQMD's latest modeling guidance for AERMOD dispersion model for performing air dispersion modeling studies. The South Coast AQMD's modeling guidance recommends that AERMOD model should be executed with the EPA regulatory default option. However, if the default option is not utilized, the modeling report should contain a discussion to justify this change and include all supporting data and information.

South Coast AQMD has also issued the following warning relating to the use of AERMOD model in non-flat terrain:

"**WARNING**: According to the USEPA's AERMOD implementation guide revised August 3, 2015, for cases in which receptor elevations are lower than the base elevation of the source, AERMOD will predict concentrations that are less than what would be estimated from an identical flat terrain situation. While this is appropriate and realistic in most cases, for cases of down-sloping terrain where the plume is terrain-following, AERMOD will tend to underestimate concentrations when terrain effects are taken into account. In order to avoid underestimating concentration in such situations, South Coast AQMD recommends the following:

1. If all receptor elevations are lower than the base elevation of the source, the non-default option within AERMOD should be applied to assume flat, level terrain.
2. If some receptors are lower and some receptors are higher than the base elevation of the source, AERMOD should be run twice – once using the default option and the second time using the non-default option. The maximum ground-level concentration from both runs should be reported."

Based on the review of the topographical map of the MPP project area and discussions with the South Coast AQMD, it was determined that the hilly terrain is at some distance from the MPP, and the maximum ground level concentrations are not expected to extend to the hilly terrain. In addition, plume from the MPP is not expected to be terrain-following. Therefore, BWP is proposing to use the EPA's regulatory default option for dispersion modeling as advised by the South Coast AQMD.

AERMOD model will be used with urban modeling option. The CCGS stack emission source will be modeled with urban effects using a population of 9,818,605 (population of Los Angeles County).

3.3 BUILDING DOWNWASH

EPA's guidance will be followed to address the potential influence on the concentrations from structures located near point emission sources. The latest building downwash program (BPIPPRM Version 04274) will be used to identify the structures required to be included in the AERMOD model and it will be used to address building downwash effect. This building downwash program will also be used to estimate the direction-specific building dimensions, which are required as inputs by the AERMOD dispersion model, to address the influence of nearby structures on the ambient concentrations.

3.4 FLAGPOLE RECEPTOR HEIGHTS

All receptors will be set to a height of 0.0 meters so that ground-level concentrations are analyzed.

3.5 AVERAGING TIME

For determining the maximum annual concentration of criteria pollutants such as NO_2 and PM10, AERMOD model will be run for each calendar year separately. However, for determining cancer risks or chronic health indexes, maximum annual concentrations will be determined using the entire 5-years of meteorological data.

On January 22, 2010, EPA strengthened the health-based NAAQS for NO_2 by setting a new 1-hour NO_2 standard at the level of 100 parts per billion (ppb). In addition to establishing an averaging time and level, EPA also set a new "form" for the standard. The form is the air quality statistic used to determine if an area meets the standard. The form for the 1-hour NO_2 standard, is the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations. Lakes software will be used to determine the 5-year average of the 98th percentile NO_2 concentrations from NOx emissions at the MPP facility.

EPA has also strengthened the health-based NAAQS for SO_2 by setting a new 1-hour SO_2 standard at the level of 75 parts per billion (ppb). In addition to establishing an averaging time and level, EPA also set a new "form" for the standard. The form is the air quality statistic used to determine if an area meets the standard. The form for the 1-hour SO_2 standard, is the 3-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations. Lakes software will be used to determine the 5-year average of the 99th percentile SO_2 concentrations from SO_2 emissions at the MPP facility.

3.6 METEOROLOGICAL DATA

AERMOD-ready meteorological data are available for download from the South Coast AQMD Website. A total of 24 sites are available from the Website and these data files were developed using site specific surface characteristics (i.e., surface albedo, surface roughness, and Bowen ratio) obtained using AERSURFACE and AERMET processor (Version 9 of the meteorological data). The meteorological input files are read directly by the AERMOD for modeling analysis. In consultation with the South Coast AQMD, BWP will use five years of the latest meteorological data set (YR 2018-2022) available for the Burbank Arpt. Station (KBUR) at the South Coast AQMD website for dispersion modeling analysis (see Appendix A for additional information).

3.7 RECEPTOR GRID

To identify the maximum impacted receptors appropriate model receptors must be selected. BWP is proposing to use the following modeling grid consisting of three parts for the dispersion modeling analysis: (1) receptors along the perimeter of the City of Burbank facility with a spacing of approximately 50 meters. Note that this spacing is consistent with the current South Coast guidance for selecting the maximum receptor spacing requirements for ambient boundary receptors, (2) receptors spaced 100 meters apart extending from the previous receptors to approximately three kilometers from the property line, and (3) receptors spaced 250 meters apart from the previous receptors to approximately two kilometers. In addition to the above receptor coverage, it is also planned to place a fine grid of receptors (100 meter grid) to be centered on the location of the maximum predicted impacts as determined from the results of coarse-grid (250 meter distance grid) receptor modeling. Thus, receptors up to about five kilometers from the facility boundary will be selected for modeling analysis. Discrete receptors within one mile of the MPP stack will also be located at sensitive receptors (e.g., schools and hospitals, etc.).

Note that for all coordinates for sources and receptors will be specified in North American Datum (NAD)83, UTM Zone 11. Receptor grid points outside the project boundary with grid spacing of 100 meters or more will be placed so that individual grid points are placed at UTM coordinates ending in "00".

3.8 RECEPTOR ELEVATIONS

Receptor elevations and hill heights will be assigned using USEPA AERMAP and commercially available digital terrain elevations developed by the United States Geological Survey by using its National Elevation Dataset (NED). The NED data provides terrain elevations with 1-meter vertical resolution and (1 arc-second) 30-meters horizontal resolution based on a UTM coordinate system. For each receptor location, the terrain elevation will be set to the elevation for the closest NED grid point. The U.S. Geological Survey specifies coordinates in NAD83, UTM Zone 11. Lakes Environmental software will be used for assigning elevations to various receptors and hill heights.

3.9 CONVERSION OF NOx TO NO_2

As described in Section 2, NO_2 impacts will be determined initially assuming 100 percent conversion of the project NOx emissions to NO_2 emissions (Tier 1). However, if the total conversion assumption results in project NO_2 impacts greater than CAAQS or NAAQS, then Tier 2: ARM2 Ratio Option (ARM2 Ratio – minimum NO_2/NOx ratio of 0.5 and maximum NO_2/NOx ratio of 0.9) will be applied as appropriate for estimating NO_2 concentrations.

SECTION 4
HEALTH RISK ASSESSMENT METHODOLOGY

This section describes the methodology that will be followed for air dispersion and health risk modeling, and health risk assessment.

4.1 AIR DISPERSION MODELING

The latest version of the AERMOD model will be used for performing air dispersion modeling. The details of the AERMOD model are provided in Section 3. In addition to the receptor locations described in Section 3 for air dispersion modeling, receptors at the centroids of census blocks surrounding the project location will also be placed for health risk assessment. These receptors will be used to estimate cancer burden if maximum individual cancer risk is estimated to be greater than 1 in a million.

4.2 HEALTH RISK ASSESSMENT MODELING

Health risk assessment will be performed using the latest version of the California Air Resources Board developed Hotspots Analysis and Reporting Program (HARP2). The HARP2 model contains the latest updates to the California Office of Health Hazard Assessment (OEHHA) toxicity. The model has several "switches" that will be set to control the operation of the program. These switches are identified in Table 4-1.

4.3 HEALTH RISK ASSESSMENT

HARP2 model will be used to estimate carcinogenic and non-carcinogenic health risks at all the receptors selected for air dispersion modeling. Carcinogenic health risk will be estimated for residential receptors (30-year exposure period), student receptors (9-year exposure period), and worker receptors (25-year exposure period).

The estimates of carcinogenic and non-carcinogenic (acute and chronic hazard indices) risk derived from the HARP2 model output for the MPP will be used to prepare the health risk assessment report. The calculation of pollutant concentrations will use 1-hour averaging period for estimating acute hazards, maximum 8-hour and annual concentrations (from the 5-year meteorological data set) for chronic non-cancer hazards, and 5-year average concentrations for cancer risk estimates. Acute hazard indices will be calculated separately for five years of meteorological data set proposed to be used for air dispersion modeling. The highest value of the acute hazard index estimated for the five years of modeling analysis will be used for health risk assessment.

Cancer burden will also be calculated if maximum individual cancer risk is estimated to be greater than 1 in a 1 million. To evaluate the cancer risk over the exposed population, the cancer burden method will be used to assess the number of excess cancer cases that could occur in the study area. The cancer burden will be calculated by multiplying the cancer risk calculated for a 70-year resident at a grid point by the number of people who live in the census block associated with that grid point. The sum of these estimates represents the cancer burden across each zone of impact (10^{-6}, 10^{-5}, etc.) for the study area. If a single census block is identified to contain more than one modeled grid point, the average of the calculated risks for the grid points within the census block will be used for the cancer burden calculation.

Table 4-1
HARP2 Model "Switches"

HARP Model Switch	Setting
Pathways (Residential)	Inhalation, Dermal, Soil, Mother's Milk
Pathways (Worker/Student)	Inhalation, Dermal, Soil
Pathway Options	Default OEHHA Tier 1 intake rates (Breathing Rates, Time at Residence, Soil Intake Rates, Dermal Loading). Dermal pathway will assume "warm" climate.
Deposition Velocity	0.02 m/sec
Exposure Duration	Residential: 30 years Worker: 25 years Student: 9 years
Start Age Bin	Residential/Student: 3rd trimester
Analysis Option	Residential (Cancer): RMP using the Derived Method Worker (Cancer): OEHHA Derived Method Non-Cancer Risk: OEHHA Derived Method
Fraction of Time at Home (FAH)	Residential: OEHHA Tier 1 defaults. Apply FAH to age bins greater than or equal to 16 years of age.
Worker Adjustment Factors (WAF)	8-hour breathing rate (OEHHA Tier 1 default) Exposure Frequency: 250 days/year Worker Adjustment Factor = 1 (8 hrs/day, 5 days/week)
Source: South Coast AQMD Risk Assessment Procedures for Rules 1401 and 212 Version 8.1, September 1, 2017, and South Coast AQMD AB2588 and Rule 1402 Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act, October 2020.	

APPENDIX A
MOST RECENT NO_2, CO AND PM10 BACKGROUNF MONITORTED DATA PROVIDED BY THE SOUTH COAST AQMD

(1)

Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

krishna Nand <krishnanand44@msn.com>

Wed 7/17/2024 8:45 AM

To:Ranil Dhammapala <RDhammapala@aqmd.gov>
Cc:krishna Nand <krishnanand44@msn.com>

Hi Ranil,

Environmental Management Professionals (EMP) is currently preparing a permit application for modifications to the existing Magnolia Power Plant Project (MPP). This power plant is located at 164 West Magnolia Boulevard in the City of Burbank, California, (164 West Magnolia Boulevard, Burbank, CA 91502) within an existing **23-acre** power generating facility. The plant is located approximately 2,000 feet southwest of the Burbank City Hall, and it is bordered by Magnolia Blvd., on the north, Lake Street on the west, Flower Street on the east, and Olive Avenue on the south. The plant is bordered by industrial properties on all sides, and the nearest sensitive receptor (school) is located approximately 2,500 feet southwest of the facility.

The existing power plant is not subject to the Prevention of Significant Deterioration (PSD) requirements and is also not expected to be subject to the PSD requirements after the modifications to the MPP. EMP had prepared a permit application in YR 2015 for modifications to the MPP. As part of the preparation of this permit application, EMP had performed extensive air dispersion modeling analysis and health risk assessment for the above project. Before performing the dispersion modeling analysis, EMP had prepared the modeling protocol, which was approved by the South Coast AQMD. In the YR 2015 modeling protocol, EMP had specified that five years of meteorological data (Years 2008 through 2012) from Burbank station available at the South Coast AQMD website will be used.

The YR 2015 modeling protocol also specified the details of the receptor modeling grid which consisted of four parts: (1) receptors along the perimeter of the City of Burbank facility with a spacing of approximately 20 meters, receptors spaced 25 meters apart extending from the previous receptors, in a 1,500 meter x 1,500 meter grid surrounding the project site, (3) receptors spaced 100 meters apart from 0.5 kilometer to 1.6 kilometer from the property line, and (4) receptors spaced 250 meters apart from one kilometer to 15 kilometers from the property line. In addition to the above receptor coverage, it was also planned to place a fine grid of receptors to be centered on the location of the maximum predicted impacts as determined from the results of coarse-grid (100 meter or higher distance grid) receptor modeling. Discrete receptors within one mile of the MPP stack was also located at sensitive receptors (e.g., schools and hospitals, etc.).

EMP is currently updating the YR 2015 modeling protocol for air dispersion modeling analysis and health risk assessment for the above project. As suggested in the current South Coast AQMD modeling guidance, EMP is proposing to use five years of the latest meteorological data set available from a representative meteorological station. EMP is therefore proposing to use five years of the latest meteorological data set available for the Burbank Arpt. Station (KBUR) at the South Coast AQMD website for dispersion modeling analysis.

EMP is also proposing to use the following modeling grid consisting of three parts for the dispersion modeling analysis: (1) receptors along the perimeter of the City of Burbank facility with a spacing of approximately 50 meters. **Note that this spacing is consistent with the current South Coast guidance for selecting the maximum receptor spacing requirements for ambient boundary receptors,** (2) receptors spaced 100 meters apart extending from the previous receptors to approximately three kilometers from the property line, and (3) receptors spaced 250 meters apart from the previous receptors to approximately two kilometers. In addition to the above receptor coverage, it is also planned to place a fine grid of receptors (100 meter grid) to be centered on the location of the maximum predicted impacts as determined from the results of coarse-grid (250 meter distance grid) receptor modeling. Thus, receptors up to about five kilometers from the facility boundary will be selected for modeling analysis. Discrete receptors within one mile of the MPP stack will also be located at sensitive receptors (e.g., schools and hospitals, etc.).

We will appreciate receiving your review comments on the above two suggested changes in the YR 2024 Modeling Protocol. We will include your suggestions (based on your review comments) in the full modeling protocol, which EMP is currently preparing, and submit it to the South Coast AQMD for approval.

Please contact me at (424) 263-7717 if you have any questions.

Thanks for your help.

Krishna Nand, Ph.D.
Principal
Environmental Management Professionals, LLC
22811 Madrona Avenue
Torrance, CA 90505

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RE: Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

Ranil Dhammapala <RDhammapala@aqmd.gov>

Thu 7/18/2024 1:40 PM

To:krishna Nand <krishnanand44@msn.com>
Cc:Chris Perri <CPerri@aqmd.gov>

1 attachments (2 MB)

kbur_sfc_pfl.zip;

Hi Krishna,

Thanks for the modeling protocol draft. However in order to approve it, I need to know which pollutant(s) will be modeled – I'm guessing NO2 will be involved – to advise you on the NO → NO2 conversion options in AERMOD, and background concentrations to consider.

I can provide the following feedback for now:

- The receptor spacing you propose is acceptable.
- The KBUR met files from 2018-2022 are attached.
- Available background concs at the nearest monitor, taken from our AQ-Card are:

East San Fernando Valley (North Hollywood (NOHO); 060374010)					
Metric	2021	2022	2023	Avg (Design Value)	Max
O_3 Max 1hr, ppm	0.11	0.106	0.12		0.12
O_3 Max 8hr, ppm	0.089	0.091	0.096		0.1
O_3 4Hi 8hr, ppm	0.079	0.082	0.085	0.08	0.09
NO_2 Max 1hr, ppb	65.4	54.2	51.4		65.4
NO_2 98%ile 1hr, ppb	49.4	47.2	46.1	47.57	49.4
NO_2 Annual Avg, ppb	13.9	12.9	11.8	12.87	13.9

Thanks!

Ranil//

Ranil Dhammapala, Ph.D.
Senior Meteorologist, Air Quality Assessment Group
Planning, Rule Development and Implementation
South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765
Phone: (909)-760-8385

From: krishna Nand <krishnanand44@msn.com>
Sent: Wednesday, July 17, 2024 8:45 AM
To: Ranil Dhammapala <RDhammapala@aqmd.gov>

Re: Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

krishna Nand <krishnanand44@msn.com>

Thu 8/8/2024 11:33 AM

To:Ranil Dhammapala <RDhammapala@aqmd.gov>
Cc:Chris Perri <CPerri@aqmd.gov>;krishna Nand <krishnanand44@msn.com>;CSReyes@burbankca.gov <CSReyes@burbankca.gov>

Hi Ranil,

I am preparing the detailed modeling protocol and noted that we do not have background concentrations for CO and PM10 for the **East San Fernando Valley (North Hollywood (NOHO); 060374010** station. We therefore need your help in providing the missing data or providing an alternate station for identifying the background concentrations for CO, PM10 and NOx please for the years 2021 through 2023.

Thanks for your help.

Krishna Nand

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RE: Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

Ranil Dhammapala <RDhammapala@aqmd.gov>

Thu 8/8/2024 1:22 PM

To:krishna Nand <krishnanand44@msn.com>
Cc:Chris Perri <CPerri@aqmd.gov>;CSReyes@burbankca.gov <CSReyes@burbankca.gov>

Hi Krishna,

The nearest site measuring both CO and PM10 is in downtown LA. Background levels are:

Central LA (Los Angeles-North Main Street; 060371103)					
Metric	2021	2022	2023	Avg (Design Value)	Max
CO Max 1hr, ppm	2	1.7	1.4		2
CO Max 8hr, ppm	1.6	1.5	1.2		1.6
PM_{10} Max 24hr, μg/m³	64	60	57		64
PM_{10} Annual Avg, μg/m³	25.5	28.9	24.3	26.23	28.9

Thanks!

Ranil//

Ranil Dhammapala, Ph.D.
Senior Meteorologist, Air Quality Assessment Group
Planning, Rule Development and Implementation
South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765
Phone: (909)-760-8385

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RE: Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

Ranil Dhammapala <RDhammapala@aqmd.gov>

Thu 8/8/2024 1:31 PM

To:krishna Nand <krishnanand44@msn.com>
Cc:Chris Perri <CPerri@aqmd.gov>;CSReyes@burbankca.gov <CSReyes@burbankca.gov>

Yes that's correct Krishna. Thanks!

From: krishna Nand <krishnanand44@msn.com>
Sent: Thursday, August 8, 2024 1:30 PM
To: Ranil Dhammapala <RDhammapala@aqmd.gov>
Cc: Chris Perri <CPerri@aqmd.gov>; CSReyes@burbankca.gov; krishna Nand <krishnanand44@msn.com>
Subject: [EXTERNAL] Re: Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

Hi Ranil,

Thanks for your prompt response.

It means that we will use the NOx background concentration from **East San Fernando Valley (North Hollywood (NOHO); 060374010** and CO and PM10 background concentration from Los Angeles-North Main Street.

Thanks for your help.

Krishna Nand

(7)

RE: Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

Ranil Dhammapala <RDhammapala@aqmd.gov>
Tue 8/20/2024 5:14 PM
To:krishna Nand <krishnanand44@msn.com>
Cc:Chris Perri <CPerri@aqmd.gov>

Hi Krishna,

Are you referring to the 3-hr secondary SO2 standard of 500 ppb, not to be exceeded more than once a year? This is not tracked continuously by us and rather than investing the time coming up with a background, I recommend you use the max 1hr SO2 background from Central LA as a conservative estimate. Its very unlikely that anyone will exceed this anyway.

Metric	2021	2022	2023	Avg (Design Value)	Max
SO_2 Max 1hr, ppb	2.2	6.5	7.7		7.7

Hope that helps

Thanks

Ranil//

From: krishna Nand <krishnanand44@msn.com>
Sent: Tuesday, August 20, 2024 4:56 PM
To: Ranil Dhammapala <RDhammapala@aqmd.gov>
Cc: Chris Perri <CPerri@aqmd.gov>; krishna Nand <krishnanand44@msn.com>
Subject: [EXTERNAL] Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

Hi Ranil,
We have to also include SOx emissions in the modeling analysis for the CEQA analysis (for the MPP Upgrade Project). I therefore reviewed the Los Angeles-North Main Street station data for SOx background concentrations (2021-2023) and noted that 3-hr average SO_2 concentrations are not provided on the South Coast AQMD webpage. We would therefore need your help in providing the missing data or providing an alternate station for identifying the 3-hr average SO_2 background concentrations please.

Thanks for your help.

Krishna Nand, Ph.D.

Principal

Environmental Management Professionals, LLC

22811 Madrona Avenue

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RE: Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

Ranil Dhammapala <RDhammapala@aqmd.gov>

Wed 8/21/2024 8:15 AM

To:krishna Nand <krishnanand44@msn.com>
Cc:Chris Perri <CPerri@aqmd.gov>

Hi Krishna,

You can use the 1hr 99th percentile background from Central LA as a conservative estimate- its pretty low anyway.

Metric	2021	2022	2023	Avg (Design Value)	Max
SO_2 Max 1hr, ppb	2.2	6.5	7.7		7.7
SO_2 99%ile 1hr, ppb	2	2.3	2	2.1	2.3

Thanks

Ranil//

From: krishna Nand <krishnanand44@msn.com>
Sent: Tuesday, August 20, 2024 7:28 PM
To: Ranil Dhammapala <RDhammapala@aqmd.gov>
Cc: Chris Perri <CPerri@aqmd.gov>; krishna Nand <krishnanand44@msn.com>
Subject: [EXTERNAL] Re: Air Dispersion Modeling and Health Risk Assessment Protocol - Proposed Modifications to the Magnolia Power Plant (City of Burbank)Project

Hi Ranil,

I am sorry, I actually meant 24-hour CAAQS (0.04 ppm) please.

Thanks,
Krishna Nand

APPENDIX C.3
Existing MPP Facility Partial Permit (issued in 2022)

South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178

Title Page	
Facility ID:	128243
Revision #:	29
Date:	February 16, 2022

FACILITY PERMIT TO OPERATE

BURBANK CITY,BURBANK WATER & POWER,SCPPA
164 W MAGNOLIA BLVD
BURBANK, CA 91502

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR A COPY THEREOF MUST BE KEPT AT THE LOCATION FOR WHICH IT IS ISSUED.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT SHALL NOT BE CONSTRUED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF ANY OTHER FEDERAL, STATE OR LOCAL GOVERNMENTAL AGENCIES.

Wayne Nastri
Executive Officer

By Thomas G. Liebel fa
Jason Aspell
Deputy Executive Officer
Engineering and Permitting

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

TABLE OF CONTENTS

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION A: FACILITY INFORMATION

LEGAL OWNER &/OR OPERATOR:	BURBANK CITY,BURBANK WATER & POWER,SCPPA
LEGAL OPERATOR (if different than owner):	
EQUIPMENT LOCATION:	164 W MAGNOLIA BLVD BURBANK, CA 91502-1720
MAILING ADDRESS:	164 W MAGNOLIA BLVD BURBANK, CA 91502-1720
RESPONSIBLE OFFICIAL:	JORGE SOMOANO
TITLE:	EXECUTIVE DIRECTOR
TELEPHONE NUMBER:	(818) 238-3550
CONTACT PERSON:	CLAUDIA REYES
TITLE:	SR. ENV. ENGINEER
TELEPHONE NUMBER:	(818) 238-3510
TITLE V PERMIT ISSUED:	January 10, 2020
TITLE V PERMIT EXPIRATION DATE:	January 09, 2025

TITLE V	RECLAIM	
YES	**NOx:**	**YES**
	SOx:	**NO**
	CYCLE:	**1**
	ZONE:	**COASTAL**

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NOx RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NOx emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin (month/year)	Year End (month/year)	Zone	NOx RTC Initially Allocated	NOx RTC[1] Holding as of 01/01/2022 (pounds)	Non-Tradable[2] Non-Usable RTCs (pounds)
7/2019	6/2020	Coastal	0	24030	2617
1/2020	12/2020	Coastal	0	0	1604
7/2020	6/2021	Coastal	0	23790	5159
1/2021	12/2021	Coastal	0	16786	1628
7/2021	6/2022	Coastal	0	53980	5233
1/2022	12/2022	Coastal	0	13555	3232
7/2022	6/2023	Coastal	0	43587	10392
1/2023	12/2023	Coastal	0	13555	0
7/2023	6/2024	Coastal	0	43587	0
1/2024	12/2024	Coastal	0	13555	0
7/2024	6/2025	Coastal	0	43587	0
1/2025	12/2025	Coastal	0	13555	0
7/2025	6/2026	Coastal	0	43587	0
1/2026	12/2026	Coastal	0	13555	0
7/2026	6/2027	Coastal	0	43587	0
1/2027	12/2027	Coastal	0	13555	0
7/2027	6/2028	Coastal	0	43587	0

Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.

2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NOx RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NOx emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin (month/year)	End	Zone	NOx RTC Initially Allocated	NOx RTC[1] Holding as of 01/01/2022 (pounds)	Non-Tradable[2] Non-Usable RTCs (pounds)
1/2028	12/2028	Coastal	0	13555	0
7/2028	6/2029	Coastal	0	43587	0
1/2029	12/2029	Coastal	0	13555	0
7/2029	6/2030	Coastal	0	43587	0
1/2030	12/2030	Coastal	0	13555	0
7/2030	6/2031	Coastal	0	43587	0
1/2031	12/2031	Coastal	0	13555	0
7/2031	6/2032	Coastal	0	43587	0
1/2032	12/2032	Coastal	0	13555	0
7/2032	6/2033	Coastal	0	43587	0
1/2033	12/2033	Coastal	0	13555	0
7/2033	6/2034	Coastal	0	43587	0
1/2034	12/2034	Coastal	0	13555	0
7/2034	6/2035	Coastal	0	43587	0
1/2035	12/2035	Coastal	0	13555	0
7/2035	6/2036	Coastal	0	43587	0
1/2036	12/2036	Coastal	0	13555	0

Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.

2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of NOx RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. Total NOx emission shall not exceed such annual allocations unless the operator obtains RTCs corresponding to the facility's increased emissions in compliance with Rules 2005 and 2007.

The level of Starting Allocation plus Non-Tradable Credits used to determine compliance with Rule 2005(c)(4) and applicability of Rule 2005(e) - Trading Zone Restrictions is listed on the last page of this Section.

The following table lists the annual allocations that were issued to this facility and the amounts of RTCs held by this facility on the day of printing this Section.

RECLAIM POLLUTANT ANNUAL ALLOCATION (POUNDS)

Year Begin (month/year)	End	Zone	NOx RTC Initially Allocated	NOx RTC[1] Holding as of 01/01/2022 (pounds)	Non-Tradable[2] Non-Usable RTCs (pounds)
7/2036	6/2037	Coastal	0	43587	0
1/2037	12/2037	Coastal	0	13555	0

Footnotes:

1. This number may change due to pending trades, emissions reported under Quarterly Certification of Emissions Report (QCER) and Annual Permit Emission Program (APEP) Report required pursuant to Rule 2004, or deductions made pursuant to Rule 2010(b). The most recent total RTC information can be obtained from the District's RTC Listing.

2. The use of such credits is subject to restrictions set forth in paragraph (f)(1) of Rule 2002.

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION B: RECLAIM ANNUAL EMISSION ALLOCATION

The annual allocation of RECLAIM Trading Credits (RTCs) for this facility is calculated pursuant to Rule 2002. If the facility submits a permit application to increase in an annual allocation to a level greater than the facility's starting Allocation plus Non-Tradable credits as listed below, the application will be evaluated for compliance with Rule 2005 (c)(4). Rule 2005 (e) - Trading Zone Restrictions applies if an annual allocation is increased to a level greater than the facility's Starting Allocation plus Non-Tradable Credits:

Year Begin (month/year)	Year End (month/year)	Zone	NOx RTC Starting Allocation (pounds)	Non-Tradable Credits(NTC) (pounds)
1/1994	12/1994	Coastal	0	0

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION C: FACILITY PLOT PLAN

(TO BE DEVELOPED)

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
Process 1: INORGANIC MATERIAL STORAGE					
STORAGE TANK, PRESSURIZED, AQUEOUS AMMONIA 19%, WITH VAPOR BALANCE SYSTEM, 12000 GALS A/N: 386307	D1				C157.1, E144.1, E193.1
Process 3: INTERNAL COMBUSTION: POWER GENERATION					
GAS TURBINE, NO. 1, COMBINED CYCLE, NATURAL GAS, GENERAL ELECTRIC, MODEL PG7241FA, WITH DRY LOW NOX COMBUSTORS, DLN 2.6+, 1787 MMBTU/HR WITH A/N: 624214 GENERATOR, 181.1 MW GENERATOR, HEAT RECOVERY STEAM STEAM TURBINE, STEAM, 142 MW	D4	C9 C10	NOX: MAJOR SOURCE**	**CO**: 2 PPMV (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]; **CO**: 2000 PPMV (5) **[RULE 407, 4-2-1982]**; **NOX**: 2 PPMV (4) **[RULE 2005, 6-3-2011]**; **NOX**: 105 PPMV (8) **[40CFR 60 Subpart GG, 2-27-2014]**; **PM**: 0.01 GRAINS/SCF (5A) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **PM**: 0.1 GRAINS/SCF (5) **[RULE 409, 8-7-1981]**; **PM**: 11 LBS/HR (5C) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **SO2**: (9) **[40CFR 72 - Acid Rain Provisions, 11-24-1997]**; **SOX**: 150 PPMV (8) **[40CFR 60 Subpart GG, 3-6-1981]**; **VOC**: 2 PPMV (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	A63.1, A195.2, A195.3, A195.4, A327.1, C1.4, D29.3, D82.1, D82.2, E57.1, E193.1, H23.1, I298.1, K67.2

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
Process 3: INTERNAL COMBUSTION: POWER GENERATION					
BURNER, DUCT, NATURAL GAS, 583 MMBTU/HR A/N: 624214	D6	C9 C10	NOX: MAJOR SOURCE**	**CO**: 2 PPMV (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]; **CO**: 2000 PPMV (5) **[RULE 407, 4-2-1982]**; **NOX**: 0.2 LBS/MMBTU (8B) **[40CFR 60 Subpart Da, 10-4-1991]**; **NOX**: 2 PPMV (4) **[RULE 2005, 6-3-2011]**; **NOX**: 114 PPMV NATURAL GAS (8A) **[40CFR 60 Subpart GG, 3-6-1981]**; **PM**: 0.01 GRAINS/SCF (5A) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **PM**: 0.03 LBS/MMBTU (8A) **[40CFR 60 Subpart Da, 10-4-1991]**; **PM**: 0.1 GRAINS/SCF (5) **[RULE 409, 8-7-1981]**; **PM**: 11 LBS/HR (5B) **[RULE 475, 10-8-1976;** *RULE 475, 8-7-1978*]; **SO2**: 0.2 LBS/MMBTU (8A) **[40CFR 60 Subpart Da, 10-4-1991]**; **SOX**: 150 PPMV (8A) **[40CFR 60 Subpart GG, 3-6-1981]**; **VOC**: 2 PPMV (4) **[RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	A63.1, A195.2, A195.3, A195.4, A327.1, C1.1, C1.2, C1.3, D29.3, D82.1, D82.2, E57.1, E193.1, I298.2, K67.2
CO OXIDATION CATALYST, SERVING UNIT NO. 1, EMERCHEM, WITH 334.1 CUBIC FEET CATALYST VOLUME, HEIGHT: 66 FT 6 IN, WIDTH: 25 FT 1 IN, DEPTH: 3 IN A/N: 613507	C9	D4 D6			

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
Process 3: INTERNAL COMBUSTION: POWER GENERATION					
SELECTIVE CATALYTIC REDUCTION, SERVING UNIT NO. 1, CORMETECH, VANADIUM-TITANIUM, 1100 CU.FT.; WIDTH: 26 FT ; HEIGHT: 67 FT ; LENGTH: 1 FT 4 IN WITH A/N: 613507 AMMONIA INJECTION, GRID	C10	D4 D6		NH3: 5 PPMV (4) [**RULE 1303(a)(1)-BACT, 5-10-1996;** *RULE 1303(a)(1)-BACT, 12-6-2002*]	A195.1, D12.1, D12.2, D12.3, D29.1, E193.1
STACK, NO.1, HEIGHT: 150 FT ; DIAMETER: 19 FT A/N: 624214	S12				
Process 4: RULE 219 EXEMPT EQUIPMENT SUBJECT TO SOURCE SPECIFIC RULES					
RULE 219 EXEMPT EQUIPMENT, COATING EQUIPMENT, PORTABLE, ARCHITECTURAL COATINGS	E13			VOC: (9) [**RULE 1113, 7-13-2007** *RULE 1113, 9-6-2013;* **RULE 1171, 2-1-2008;** *RULE 1171, 5-1-2009*]	K67.1
RULE 219 EXEMPT EQUIPMENT, COOLING TOWER	E18				
Process 5: DRY STORAGE					
STORAGE SILO, SODA ASH, 3000 FT3, WITH PASSIVE VENT FILTER, 25 TOTAL CARTRIDGES 307 FT2 FILTER AREA, HEIGHT: 48 FT ; DIAMETER: 9 FT A/N: 524486	D15				E193.3
STORAGE SILO, LIME, 2000 FT3, WITH PASSIVE VENT FILTER, 25 TOTAL CARTRIDGES 307 FT2 FILTER AREA, HEIGHT: 40 FT ; DIAMETER: 8 FT A/N: 524487	D16				E193.3

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
Process 5: DRY STORAGE					
UNLOADING STATION, WITH 1 PNEUMATIC HOSE A/N: 524486	D17				E193.3

* (1) (1A) (1B) Denotes RECLAIM emission factor
(2) (2A) (2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit
(4) Denotes BACT emission limit
(5) (5A) (5B) Denotes command and control emission limit
(6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit
(8) (8A) (8B) Denotes 40 CFR limit (e.g. NSPS, NESHAPS, etc.)
(9) See App B for Emission Limits
(10) See section J for NESHAP/MACT requirements

** Refer to section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

SECTION D: DEVICE ID INDEX

The following sub-section provides an index to the devices that make up the facility description sorted by device ID.

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION D: DEVICE ID INDEX

Device Index For Section D			
Device ID	**Section D Page No.**	**Process**	**System**
D1	1	1	0
D4	1	3	0
D6	2	3	0
C9	2	3	0
C10	3	3	0
S12	3	3	0
E13	3	4	0
D15	3	5	0
D16	3	5	0
D17	4	5	0
E18	3	4	0

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

FACILITY CONDITIONS

F9.1 Except for open abrasive blasting operations, the operator shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

(a) As dark or darker in shade as that designated No.1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or

(b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph (a) of this condition.

[**RULE 401, 3-2-1984;** RULE 401, 11-9-2001]

F67.1 The facility operator shall comply with all terms and conditions specified below.

Continuous operation of monitoring systems not subject to a specific regulation or rule with provisions for monitor outages are not required when necessary calibration, maintenance or repair activities are performed in accordance with manufacturer's recommendation. The operator shall take all reasonable actions to minimize the time required to perform such activities. In no event shall any such activities exceed 96 consecutive hours for any one calibration, maintenance, or repair episode.

The operator shall notify the Executive Officer within 24 hours of the start of a calibration, maintenance, or repair activity, if the activity is expected to last more than 24 consecutive hours.

[**RULE 204, 10-8-1993**]

DEVICE CONDITIONS

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

A. Emission Limits

A63.1 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
CO	Less than or equal to 9243 LBS IN ANY ONE MONTH
PM10	Less than or equal to 9552 LBS IN ANY ONE MONTH
VOC	Less than or equal to 3744 LBS IN ANY ONE MONTH
SOX	Less than or equal to 1022 LBS IN ANY ONE MONTH

The operator shall calculate the emission limit(s) by using the monthly fuel use data and the following emissions factors: PM10 with duct firing = 7.98 lb/MMscf, PM10 without duct firing = 6.93 lb/MMscf, VOC with duct ring = 2.69 lb/MMscf, VOC without duct firing = 2.69 lb/MMscf, VOC startups = 30 lb/event, VOC shutdown = 17 lb/event, SOx = 0.75 lb/MMscf.

The operator shall calculate the emission limit(s) for CO, after the CO CEMS certification based upon the readings from the AQMD certified CEMS. In the event the CO CEMS is not operating or the emissions exceed the valid upper range of the analyzer, the emissions shall be calculated in accordance with the approved CEMS plan.

For the purposes of this condition, the limit(s) shall be based on the total combined emissions from equipment D4 (Gas Turbine 1) and D6 (Duct Burner).

[**RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices subject to this condition : D4, D6]

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

A195.1 The 5 PPMV NH3 emission limit(s) is averaged over 60 minutes at 15 percent oxygen, dry. The operator shall continuously record the NH3 slip concentration using the following:.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

An exhaust gas sampling system consisting of an exhaust gas probe in the stack at the outlet of the SCR sending exhaust sample to both an analyzer measuring NOx only (unconverted sample) and an analyzer utilizing an NH3 to NOx converter and measuring total nitrogen, including NOx and NH3 (converted sample)..

The following equation is used to calculate NH3 slip:.

NH3 slip, ppm = NOX, ppm (Converted sample) - NOX, ppm (Total, unconverted sample).

The monitoring device shall monitor and record NH3 concentrations and alert the operator (via audible or visible alarm) whenever NH3 concentrations are near, at, or in excess of the permitted NH3 limit of 5 ppmv, corrected to 15 percent oxygen. It shall also record the date, time, extent (in time) of all excursions above 5 ppmv, corrected to 15 percent oxygen..

The continuous emission monitoring device described above shall be operated and maintained according to a Quality Assurance Plan (QAP) approved by the Executive Officer. The QAP must address contingencies for monitored ammonia concentrations near, at, or above the permitted compliance limit, and remedial actions to reduce ammonia levels once an exceedance has occurred..

The ammonia slip calculation procedures described above shall not be used for compliance determination or emission information without corroborative data using an approved reference method for the determination of ammonia..

The SCAQMD may require the installation of a CEMS designed to monitor ammonia concentration if the SCAQMD determines that a commercially available CEMS has been proven to be accurate and reliable and that an adequate Quality Assurance/Quality Control (QA/QC) protocol has been established. The SCAQMD or other agency must establish an SCAQMD approved QA/QC protocol prior to the ammonia CEMS becoming a requirement..

In the event that an ammonia CEMS is installed, the ammonia slip calculation and annual ammonia slip testing requirement shall no longer be required..

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : C10]

A195.2 The 2 PPMV NOX emission limit(s) is averaged over 3 hours at 15 percent oxygen, dry.

The 2.0 PPM NOX emission limit shall not apply during startup and shutdown periods. Startup time shall not exceed 6 hours per startup per day. NOx emissions during the 6 hours after commencement of a start up shall not exceed 440 lbs. Shutdown time shall not exceed 30 minutes per shutdown per day. NOx emissions during the 30 minutes prior to the conclusion of a shutdown shall not exceed 25 lbs. The operator shall limit the number of start ups to 5 per month.

The operator shall keep records of the date, time and duration as well as minute by minute data (NOx, CO and O2 concentration and fuel flow rate at a minimum) of each startup and shutdown

[**RULE 2005, 6-3-2011**]

[Devices subject to this condition : D4, D6]

A195.3 The 2 PPMV CO emission limit(s) is averaged over 1 hour at 15 percent oxygen, dry.

The 2.0 PPM CO emission limit shall not apply during startup and shutdown periods. Startup time shall not exceed 6 hours per startup per day. Shutdown time shall not exceed 30 minutes per shutdown per day. CO emissions during the 30 minutes prior to the conclusion of a shutdown shall not exceed 120 lbs. The operator shall limit the number of start ups to 5 per month.

The operator shall keep records of the date, time and duration as well as minute by minute data (NOx, CO and O2 concentration and fuel flow rate at a minimum) of each startup and shutdown

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D4, D6]

A195.4 The 2 PPMV VOC emission limit(s) is averaged over 1 hour at 15 percent, dry.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D4, D6]

A327.1 For the purpose of determining compliance with District Rule 475, combustion contaminant emissions may exceed the concentration limit or the mass emission limit listed, but not both limits at the same time.

[**RULE 475, 10-8-1976;** RULE 475, 8-7-1978]

[Devices subject to this condition : D4, D6]

C. Throughput or Operating Parameter Limits

C1.1 The operator shall limit the fuel usage to no more than 555 MM cubic feet per year.

[**RULE 1303(b)(1)-Modeling, 5-10-1996;** RULE 1303(b)(1)-Modeling, 12-6-2002; **RULE 2005, 6-3-2011**]

[Devices subject to this condition : D6]

C1.2 The operator shall limit the fuel usage to no more than 6.66 MM cubic feet per day.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[**RULE 1303(b)(1)-Modeling, 5-10-1996;** RULE 1303(b)(1)-Modeling, 12-6-2002]

[Devices subject to this condition : D6]

C1.3 The operator shall limit the fuel usage to no more than 133 MM cubic feet per month.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2005, 6-3-2011**]

[Devices subject to this condition : D6]

C1.4 The operator shall limit the operating time to no more than 8322 hour(s) in any one year.

[**RULE 1303(b)(1)-Modeling, 5-10-1996;** RULE 1303(b)(1)-Modeling, 12-6-2002; **RULE 2005, 6-3-2011**]

[Devices subject to this condition : D4]

C157.1 The operator shall install and maintain a pressure relief valve set at 25 psig.

[**RULE 1303(a)(1)-BACT, 5-10-1996**]

[Devices subject to this condition : D1]

D. Monitoring/Testing Requirements

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

D12.1 The operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the total hourly throughput of injected ammonia. The operator shall continuously record the flow rate with a measuring device or gauge accurate to +/- 5 percent, calibrated once every 12 months Continuously record shall be defined as recording at least once every hour and shall be calculated based upon the average of the continuous monitoring for that hour..

The operator shall maintain the flow rate between 50 and 350 lbs per hour, except during start up and shutdown,

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2012, 5-6-2005**]

[Devices subject to this condition : C10]

D12.2 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the exhaust at the inlet to the SCR reactor. The operator shall continuously record the temperature with a measuring device or gauge accurate to +/- 5 percent, calibrated once every 12 months.. Continuously record shall be defined as recording at least once every hour and shall be calculated based upon the average of the continuous monitoring for that hour..

The operator shall maintain the exhaust temperature at the inlet of the SCR between 450 and 900 deg F. except during start up and shutdown,

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2012, 5-6-2005**]

[Devices subject to this condition : C10]

FACILITY PERMIT TO OPERATE
BURBANK CITY,BURBANK WATER & POWER,SCPPA

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

D12.3 The operator shall install and maintain a(n) pressure gauge to accurately indicate the differential pressure across the the SCR catalyst bed in inches of water column. The operator shall continuously record the pressure with a measuring device or gauge accurate to +/- 5 percent, calibrated once every 12 months. . Continuously record shall be defined as recording at least once every month and shall be calculated based upon the average of the continuous monitoring for that month..

The operator shall maintain the differential pressure across the SCR catalyst bed between 1.0 and 5 inches water column, except during start up and shutdown,

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 2012, 5-6-2005**]

[Devices subject to this condition : C10]

D29.1 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
NH3 emissions	District method 207.1	1 hour	Outlet of the SCR

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SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

The test shall be conducted to demonstrate compliance with the rule 1303 concentration limit.

The test shall be conducted at least every calendar year. If the results of any calendar year test show non-compliance with the limit, then quarterly tests must be conducted and at least 4 consecutive tests must show compliance with the limit before calendar year testing can resume..

The NOx concentration, as determined by the CEMS, shall be simultaneously recorded during the ammonia slip test. If the CEMS is inoperable, a test shall be conducted to determine the NOx emissions using District Method 100.1 measured over a 60 minute averaging time period.

The test shall be conducted and the results submitted to the SCAQMD within 60 days after the test date. The SCAQMD shall be notified of the date and time of the test at least 10 days prior to the test.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : C10]

D29.3 The operator shall conduct source test(s) for the pollutant(s) identified below.

Pollutant(s) to be tested	Required Test Method(s)	Averaging Time	Test Location
SOX emissions	AQMD Laboratory Method 307-91	District-approved averaging time	Fuel Sample
ROG emissions	Approved District method	1 hour	Outlet of the SCR
PM emissions	EPA Method 201A/District Method 5.1	District-approved averaging time	Outlet of the SCR

The test shall be conducted to demonstrate compliance with the Rule 1303 concentration and/or monthly emissions limit.

The test shall be conducted at least once every 3 yrs. SCAQMD shall be notified of the date & time of the test at least 10 days prior to the test. The test shall be conducted 1) when the turbine and duct burner are operating simultaneously at 100% of max heat input, or as close as practicable, but not less than 90% of max heat input and 2) when the turbine is operating alone at 100% of max heat input, or as close as practicable, but not less than 90% of max heat input.

For natural gas fired turbines only, an alternative to SCAQMD Method 25.3 for the purpose of demonstrating compliance with BACT may be the following:

a) Triplicate stack gas samples extracted directly into Summa canisters, maintaining a final canister pressure between 400-500 mm Hg absolute,

b) Pressurization of the Summa canisters with zero gas analyzed/certified to less than 0.05 ppmv total hydrocarbons as carbon, and

c) Analysis of Summa canisters per unmodified EPA Method TO-12 (with pre-concentration) or the canister analysis portion of SCAQMD Method 25.3 with a minimum detection limit of 0.3 ppmv or less and reported to two significant figures. The temperature of the Summa canisters when extracting the samples for analysis shall not be below 70 F

The use of this alternative method for VOC compliance determination does not mean that it is more accurate then unmodified SCAQMD Method 25.3, nor does it mean that it may be used in lieu of SCAQMD Method 25.3 without prior approval, except for the determination of compliance with the BACT level of 2.0 ppmv ROG calculated as carbon for natural gas fired turbines.

Source test results shall be submitted to the SCAQMD no later than 60 days after the source test was conducted.

Emission data shall be expressed in terms of concentration (ppmv) corrected to 15 percent oxygen (dry basis), mass rate (lbs/hr), and lbs/MM Cubic Feet. In addition, solid PM emissions, if required to be tested, shall also be reported in terms of grains per DSCF.

All exhaust flow rate shall be expressed in terms of dry standard cubic feet per minute (DSCFM) and dry actual cubic feet per minute (DACFM).

All moisture concentration shall be expressed in terms of percent corrected to 15 percent oxygen.

Source test results shall also include the oxygen levels in the exhaust, fuel flow rate (CFH), the flue gas temperature, and the generator power output (MW) and duct burner input (mmbtu/hr) under which the test was conducted.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices subject to this condition : D4, D6]

D82.1 The operator shall install and maintain a CEMS to measure the following parameters:

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The operator shall comply with the terms and conditions set forth below:

CO concentration in ppmv

The CEMS shall be installed and operated to measure CO concentrations over a 15 minute averaging time period.

Concentrations shall be corrected to 15 percent oxygen on a dry basis.

The CEMS will convert the actual CO concentrations to mass emission rates (lbs/hr) using the equation below, and record the hourly emission rates on a continuous basis.

CO Emission Rate, lbs/hr = K*Cco*Fd[20.9/(20.9%-%O2 d)][(Qg*HHV)/10E6], where

1. K = 7.267*10-8 (lbs/scf)/ppm
2. Cco = Average of 4 consecutive 15 min. average CO concentrations, ppm
3. Fd = 8710 dscf/MMBTU natural gas
4. %O2, d = Hourly average % by volume O2 dry, corresponding to Cco
5. Qg = Fuel gas usage during the hour, scf/hr
6. HHV = Gross high heating value of the fuel gas, BTU/scf

The CEMS will convert the actual NOx concentrations to mass emission rates (lbs/hr and record the hourly emission rates on a continuous basis.

The CEMS shall be installed and operated in accordance with an AQMD approved Rule 218 CEMS plan application.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices subject to this condition : D4, D6]

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

D82.2 The operator shall install and maintain a CEMS to measure the following parameters:

NOX concentration in ppmv

Concentrations shall be corrected to 15 percent oxygen on a dry basis.

[RULE 2012, 5-6-2005; 40CFR 72 - Acid Rain Provisions, 11-24-1997]

[Devices subject to this condition : D4, D6]

E. Equipment Operation/Construction Requirements

E57.1 The operator shall vent this equipment to the CO oxidation and SCR control whenever this equipment is in operation..

Ammonia injection shall commence once the exhaust temperature into the SCR catalyst has reached 450 degrees F.

The operator may choose not to use ammonia injection during a start up or shutdown if the SCR inlet temperature is less than 450 deg F, not to exceed 6 hours during a start up and not to exceed 30 minutes during a shutown

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002; **RULE 2005, 6-3-2011**]

[Devices subject to this condition : D4, D6]

E144.1 The operator shall vent this equipment, during filling, only to the vessel from which it is being filled.

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002]

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[Devices subject to this condition : D1]

E193.1 The operator shall construct, operate, and maintain this equipment according to the following specifications:

In accordance with all mitigation measures stipulated in the Final California Energy Commission Certificate for 01-AFC-6 prepared for this project.

[CA PRC CEQA, 11-23-1970]

[Devices subject to this condition : D1, D4, D6, C10]

E193.3 The operator shall operate and maintain this equipment according to the following specifications:

The bin vent filter shall be in the ON position at all times during filling of the silo, and for at least 1 hour after filling has ended

Filling of the silo shall be stopped immediately if the high level switch is activated

The storage silo shall not be filled past the high level switch

The unload truck hose shall be equipped with a dust cap. The dust cap shall be in place at all times except during the actual filling operation

[**RULE 1303(a)(1)-BACT, 5-10-1996;** RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 403, 4-2-2004; RULE 403, 6-3-2005**]

[Devices subject to this condition : D15, D16, D17]

H. Applicable Rules

H23.1 This equipment is subject to the applicable requirements of the following rules or regulations:

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The operator shall comply with the terms and conditions set forth below:

Contaminant	Rule	Rule/Subpart
Sulfur compounds	District Rule	431.1

[RULE 431.1, 6-12-1998]

[Devices subject to this condition : D4]

I. Administrative

I298.1 This equipment shall not be operated unless the facility holds 132444 pounds of NOx RTCs in its allocation account to offset the annual emissions increase for the first year of operation. The RTCs held to satisfy the first year of operation portion of this condition may be transferred only after one year from the initial start of operation. In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the start of operation, the facility holds 132444 pounds of NOx RTCs valid during that compliance year. RTCs held to satisfy the compliance year portion of this condition may be transferred only after the compliance year for which the RTCs are held. If the initial or annual hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[RULE 2005, 6-3-2011]

[Devices subject to this condition : D4]

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

I298.2 This equipment shall not be operated unless the facility holds 4300 pounds of NOx RTCs in its allocation account to offset the annual emissions increase for the first year of operation. The RTCs held to satisfy the first year of operation portion of this condition may be transferred only after one year from the initial start of operation. In addition, this equipment shall not be operated unless the operator demonstrates to the Executive Officer that, at the commencement of each compliance year after the start of operation, the facility holds 4300 pounds of NOx RTCs valid during that compliance year. RTCs held to satisfy the compliance year portion of this condition may be transferred only after the compliance year for which the RTCs are held. If the initial or annual hold amount is partially satisfied by holding RTCs that expire midway through the hold period, those RTCs may be transferred upon their respective expiration dates. This hold amount is in addition to any other amount of RTCs required to be held under other condition(s) stated in this permit.

[**RULE 2005, 6-3-2011**]

[Devices subject to this condition : D6]

K. Record Keeping/Reporting

K67.1 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

For architectural applications where no thinners, reducers, or other VOC containing materials are added, maintain semi-annual records for all coating consisting of (a) coating type, (b) VOC content as supplied in grams per liter (g/l) of materials for low-solids coatings, (c) VOC content as supplied in g/l of coating, less water and exempt solvent, for other coatings.

For architectural applications where thinners, reducers, or other VOC containing materials are added, maintain daily records for each coating consisting of (a) coating type, (b) VOC content as applied in grams per liter (g/l) of materials used for low-solids coatings, (c) VOC content as applied in g/l of coating, less water and exempt solvent, for other coatings.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

[**RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997**]

[Devices subject to this condition : E13]

K67.2 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Natural gas fuel use, hours of operation, date and time of each start up and shutdown, and CEMS minute data during the 6 hours that includes a start up and during the 30 minutes that includes a shutdown

[**RULE 1303(b)(2)-Offset, 5-10-1996;** RULE 1303(b)(2)-Offset, 12-6-2002; **RULE 2012, 5-6-2005**]

[Devices subject to this condition : D4, D6]